APPENDIX B

B.1 ONTOLOGY DESIGN DOCUMENT

Date: ……

1. Initial ontology structure:

Fig. 40: Initial Ontology structure

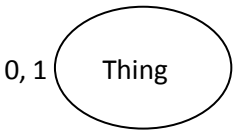

Table8: Initial Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0,1)	X

2. Concept encountered: *Bikes* with concept features:

{ hasComponent^{+} } → f^{+} 1

{ hasMake^{+} } → f^{+} 2

{ hasEngineCapacity^{+} } → f^{+} 3

{ hasPower^{+} } → f^{+} 4

{ hasPrice^{+} } → f^{+} 5

{ hasFuelTankCapacity^{+} } → f^{+} 6

{ hasMileage^{+} } → f^{+} 7

{ hasBrakes^{+} } → f^{+} 8

{ hasWeight^{+} } → f^{+} 9

{ hasWheelType^{+} } → f^{+} 10

{ hasIgnition^{+} } → f^{+} 11

{ hasGears^{+} } → f^{+} 12

(a.) This can be represented as a Boolean equation as:
C (Bikes): { $f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$ }

(b.) Matching the above Boolean equation and Concept *Thing* in the location map, it is seen that *Bikes* is a sub-concept of *Thing* as *Thing* encompasses everything.

(c.) The location of new concept *Bikes* is (1, 1). The new concept is added to the location (1,1) in location map as below:

Fig. 41: Modified Ontology structure

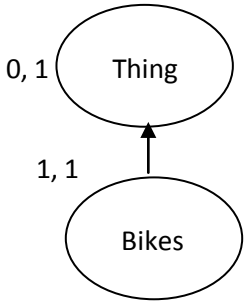

Table9: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0,1)	X
Bikes (1,1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$

3. Concept encountered: *Make* with concept features:

{ $hasMake^+$ } → f^+2

(a.) This can be represented as a Boolean equation as:
C (Make): { f^+2}

(b.) Matching the above Boolean equation and concepts *Thing* & *Bikes* in the location map, it is seen that *Make* is a sub-concept of *Thing* and is either a brother concept or sub-concept of *Bike*. Matching C (Make): { f^+2} with C (Bikes): { $f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$ }, it is found that *Make* is a brother-concept of *Bikes*.

(c.) The location of new concept *Make* is (1, 2). The new concept is added to the location (1, 2) in location map as below:

Fig. 42: Modified Ontology structure

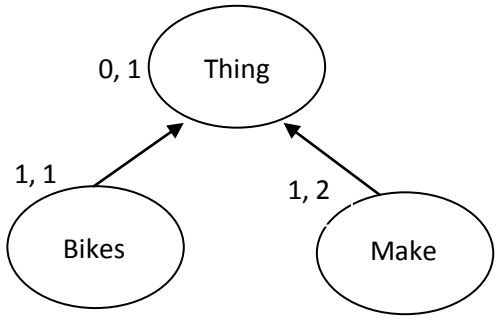

Table10: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0,1)	X
Bikes (1,1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
Make (1,2)	f^+2

4. Concept encountered: *EngineCapacity* with concept features:

{ hasEngineCapacity$^+$ } → f^+3

(a.) This can be represented as a Boolean equation as:
C (EngineCapacity): { f^+3}

(b.) Matching the above Boolean equation and concepts *Thing*, *Bikes* and *Make* in the location map, it is seen that *EngineCapacity* is a sub-concept of *Thing* and is either a brother concept or sub-concept of *Bike* or *Make*. Matching C (EngineCapacity): { f^+3} with C (Bikes): { $f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$ } and C (Make): { f^+2}, it is found that *EngineCapacity* is a not a sub-concept of either *Bikes* or *Make*.
Thus, it is found that *EngineCapacity* is a brother concept of *Bikes* and *Make*.

(c.) The location of new concept *Make* is (2, 2). The new concept is added to the location (2, 2) in location map as below:

Fig. 43: Modified Ontology structure

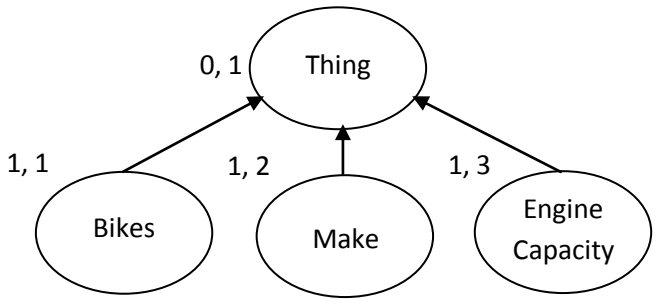

Table11: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0,1)	X
Bikes (1,1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
Make (1,2)	f^+2
EngineCapacity (1,3)	f^+3

5. Following the above methodology, we develop the ontology structure for the following subsequent concepts:

Table12: List of subsequent concepts

CONCEPT NAME	CONCEPT FEATURE	BOOLEAN EQUATION
Power	$\{hasPower^+\} \rightarrow f^+4$	C (Power): $\{f^+4\}$
Price	$\{hasPrice^+\} \rightarrow f^+5$	C (Price): $\{f^+5\}$
FuelTankCapacity	$\{hasFuelTankCapacity^+\} \rightarrow f^+6$	C (FuelTankCapacity): $\{f^+6\}$
Mileage	$\{hasMileage^+\} \rightarrow f^+7$	C (Mileage): $\{f^+7\}$
Brakes	$\{hasBrakes^+\} \rightarrow f^+8$	C (Brakes): $\{f^+8\}$
Weight	$\{hasWeight^+\} \rightarrow f^+9$	C (Weight): $\{f^+9\}$
WheelType	$\{hasWheelType^+\} \rightarrow f^+10$	C (WheelType): $\{f^+10\}$
Ignition	$\{hasIgnition^+\} \rightarrow f^+11$	C (Ignition): $\{f^+11\}$
Gears	$\{hasGears^+\} \rightarrow f^+12$	C (Gears): $\{f^+12\}$

Fig. 44: Modified Ontology structure

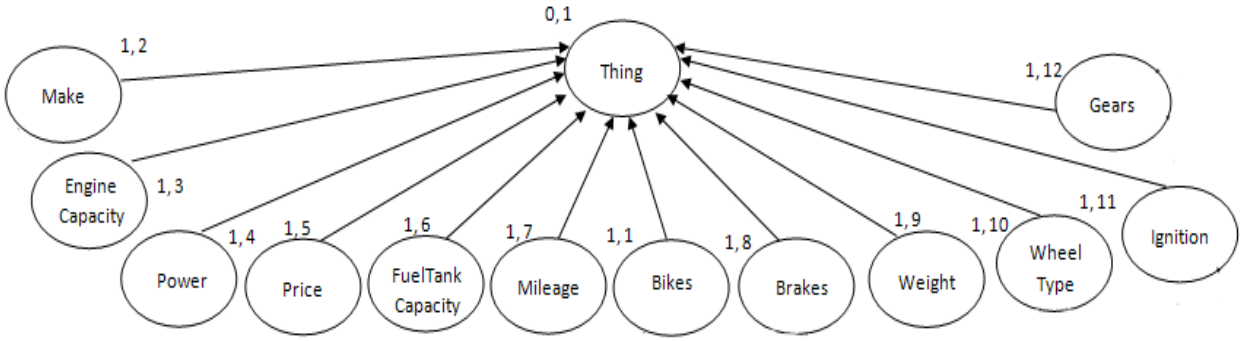

Table13: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0, 1)	X
Bikes (1, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
Make (1, 2)	f^+2
EngineCapacity (1, 3)	f^+3
Power (1, 4)	f^+4
Price (1, 5)	f^+5
FuelTankCapacity (1, 6)	f^+6
Mileage (1, 7)	f^+7
Brakes (1, 8)	f^+8
Weight (1, 9)	f^+9
WheelType (1, 10)	f^+10
Ignition (1,11)	f^+11
Gears (1 ,12)	f^+12

6. Since we created *NamedBikes* to be merely a container for all named bikes, so we add it as a sub-concept of *Bikes* with same concept feature as of *Bikes* as follows:

Fig. 45: Modified Ontology structure

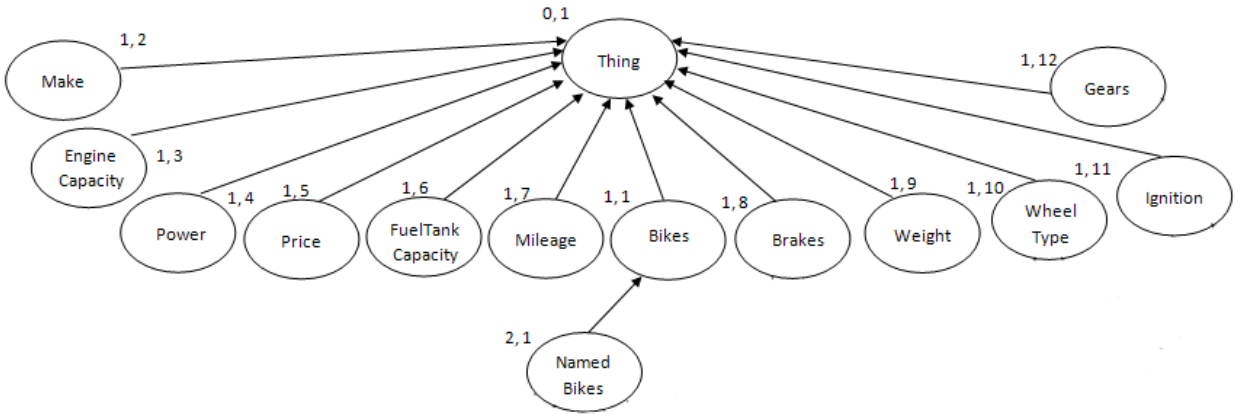

Table14: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0, 1)	X
Bikes (1, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
Make (1, 2)	f^+2
EngineCapacity (1, 3)	f^+3
Power (1, 4)	f^+4
Price (1, 5)	f^+5
FuelTankCapacity (1, 6)	f^+6
Mileage (1, 7)	f^+7
Brakes (1, 8)	f^+8
Weight (1, 9)	f^+9
WheelType (1, 10)	f^+10
Ignition (1,11)	f^+11
Gears (1 ,12)	f^+12
NamedBikes (2, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$

7. Concept encountered: *HeroHonda* with concept features:

   $\{ \text{hasMake}^+ \} \rightarrow f^+2$

   $\{ \text{hasMake}^+ = \text{HeroHonda} \} \rightarrow f^+13$

(a.) This can be represented as a Boolean equation as:
C (HeroHonda): $\{ f^+2 \bullet f^+13 \}$

(b.) Matching the above Boolean equation with concepts *Thing*, *Bikes*, *Make*, *EngineCapacity*, *Power*, *Price*, *FuelTankCapacity*, *Mileage*, *Brakes*, *Weight*, *WheelType*, *Ignition*, *Gears* and *NamedBikes* in the location map, it is seen that *HeroHonda* is a sub-concept of *Thing* and is either a brother concept or sub-concept of *Bikes*, *Make*, *EngineCapacity*, *Power*, *Price*, *FuelTankCapacity*, *Mileage*, *Brakes*, *Weight*, *WheelType*, *Ignition or Gears*. Matching C (HeroHonda): $\{ f^+2 \bullet f^+13 \}$ with them, it is found that *HeroHonda* is a sub-concept of *Make.*

(c.) The location of new concept *HeroHonda* is (2, 2). The new concept is added to the location (3, 1) in location map as below:

Fig. 46: Modified Ontology structure

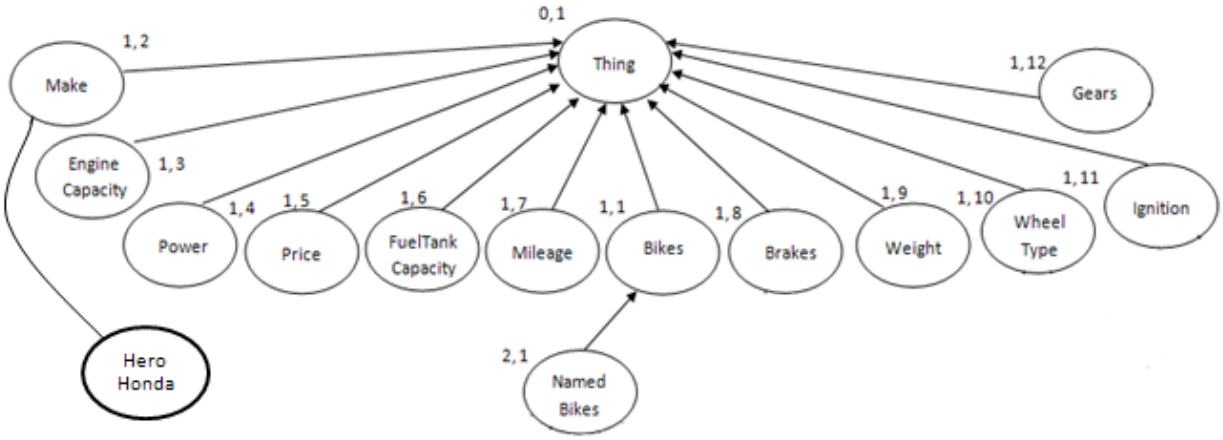

Table15: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0, 1)	X
Bikes (1, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
Make (1, 2)	f^+2
EngineCapacity (1, 3)	f^+3
Power (1, 4)	f^+4
Price (1, 5)	f^+5
FuelTankCapacity (1, 6)	f^+6
Mileage (1, 7)	f^+7
Brakes (1, 8)	f^+8
Weight (1, 9)	f^+9
WheelType (1, 10)	f^+10
Ignition (1,11)	f^+11
Gears (1 ,12)	f^+12
NamedBikes (2, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
HeroHonda (2, 2)	$f^+2 \bullet f^+13$

8. Following the above methodology, we develop the ontology structure for the following subsequent concepts:

Table16: List of subsequent concepts

CONCEPT NAME	CONCEPT FEATURE	BOOLEAN EQUATION
Hero	{ $hasMake^+$ } → f^+2 { $hasMake^+$ = Hero } → f^+14	C (HeroHonda): { f^+2 • f^+14}
Bajaj	{ $hasMake^+$ } → f^+2 { $hasMake^+$ = Bajaj } → f^+15	C (Bajaj): { f^+2 • f^+15}
RoyalEnfield	{ $hasMake^+$ } → f^+2 { $hasMake^+$ = RoyalEnfield } → f^+16	C (RoyalEnfield): { f^+2 • f^+16}
Yamaha	{ $hasMake^+$ } → f^+2 { $hasMake^+$ = Yamaha} → f^+17	C (Yamaha): { f^+2 • f^+17}
TVS	{ $hasMake^+$ } → f^+2 { $hasMake^+$ = TVS } → f^+18	C (TVS): { f^+2 • f^+18}
Honda	{ $hasMake^+$ } → f^+2 { $hasMake^+$ = Honda } → f^+19	C (Honda): { f^+2 • f^+19}

Fig. 47: Modified Ontology structure

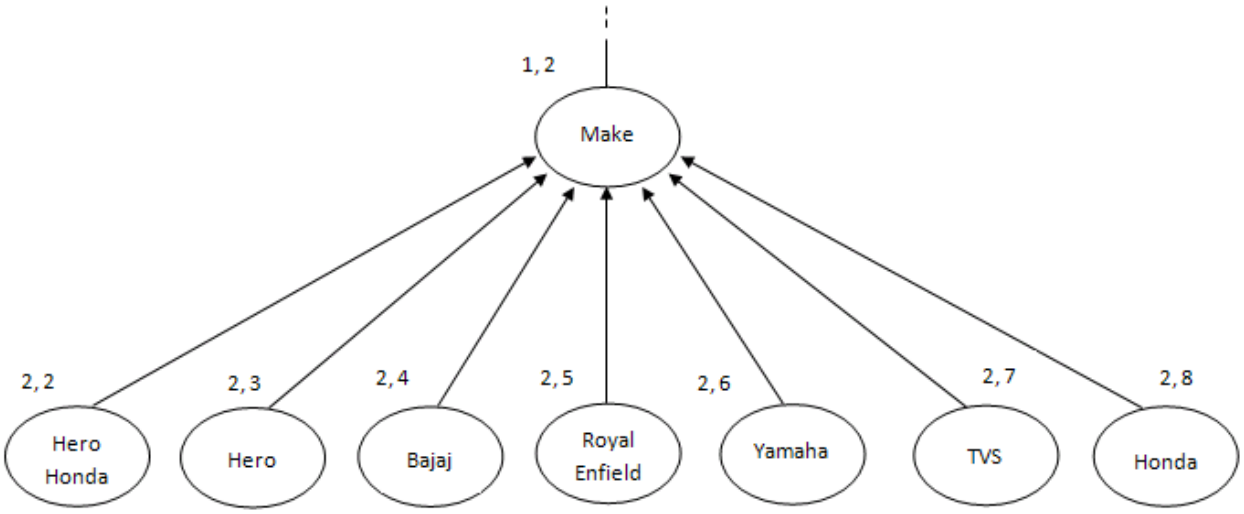

Table17: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0, 1)	X
Bikes (1, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
Make (1, 2)	f^+2
EngineCapacity (1, 3)	f^+3
Power (1, 4)	f^+4
Price (1, 5)	f^+5
FuelTankCapacity (1, 6)	f^+6
Mileage (1, 7)	f^+7
Brakes (1, 8)	f^+8
Weight (1, 9)	f^+9
WheelType (1, 10)	f^+10
Ignition (1,11)	f^+11
Gears (1 ,12)	f^+12
NamedBikes (2, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
HeroHonda (2, 2)	$f^+2 \bullet f^+13$
Hero (2, 3)	$f^+2 \bullet f^+14$
Bajaj (2, 4)	$f^+2 \bullet f^+15$
RoyalEnfield (2, 5)	$f^+2 \bullet f^+16$
Yamaha (2, 6)	$f^+2 \bullet f^+17$
TVS (2, 7)	$f^+2 \bullet f^+18$
Honda (2, 8)	$f^+2 \bullet f^+19$

9. Concept encountered: *HeroHondaBikes* with concept features:

$\{ hasMake^+ \} \rightarrow f^+2$

$\{ hasEngineCapacity^+ \} \rightarrow f^+3$

$\{ hasPower^+ \} \rightarrow f^+4$

$\{ hasPrice^+ \} \rightarrow f^+5$

$\{ hasFuelTankCapacity^+ \} \rightarrow f^+6$

$\{ hasMileage^+ \} \rightarrow f^+7$

$\{ hasBrakes^+ \} \rightarrow f^+8$

$\{ hasWeight^+ \} \rightarrow f^+9$

$\{ hasWheelType^+ \} \rightarrow f^+10$

$\{ hasIgnition^+ \} \rightarrow f^+11$

$\{ hasGears^+ \} \rightarrow f^+12$

{ hasMake^{+} = HeroHonda } → f^{+} 13

(a.) This can be represented as a Boolean equation as:
C (HeroHondaBikes): { f^{+} 2 • f^{+} 3 • f^{+} 4 • f^{+} 5 • f^{+} 6 • f^{+} 7 • f^{+} 8 • f^{+} 9 • f^{+} 10 • f^{+} 11 • f^{+} 12 • f^{+} 13 }

(b.) Matching the above Boolean equation with concepts *Thing*, *Bikes*, *Make*, *EngineCapacity*, *Power*, *Price*, *FuelTankCapacity*, *Mileage*, *Brakes*, *Weight*, *WheelType*, *Ignition*, *Gears* and *NamedBikes* in the location map, it is seen that *HeroHondaBikes* is a sub-concept of *Thing* and is either a brother concept or sub-concept of *Bikes*, *Make*, *EngineCapacity*, *Power*, *Price*, *FuelTankCapacity*, *Mileage*, *Brakes*, *Weight*, *WheelType*, *Ignition*, *Gears* or *NamedBikes*. Matching C (HeroHondaBikes): { f^{+} 2 • f^{+} 3 • f^{+} 4 • f^{+} 5 • f^{+} 6 • f^{+} 7 • f^{+} 8 • f^{+} 9 • f^{+} 10 • f^{+} 11 • f^{+} 12 • f^{+} 13} with them, it is found that *HeroHondaBikes* cannot be a sub-concept of *Make*, *EngineCapacity*, *Power*, *Price*, *FuelTankCapacity*, *Mileage*, *Brakes*, *Weight*, *WheelType*, *Ignition* and *Gears*. It is then found that *HeroHondaBikes* is a sub-concept of *Bikes* and thus a sub-concept of *NamedBikes*.

(c.) The location of new concept *HeroHondaBikes* is (3, 1). The new concept is added to the location (3, 1) in location map as below:

Fig. 48: Modified Ontology structure

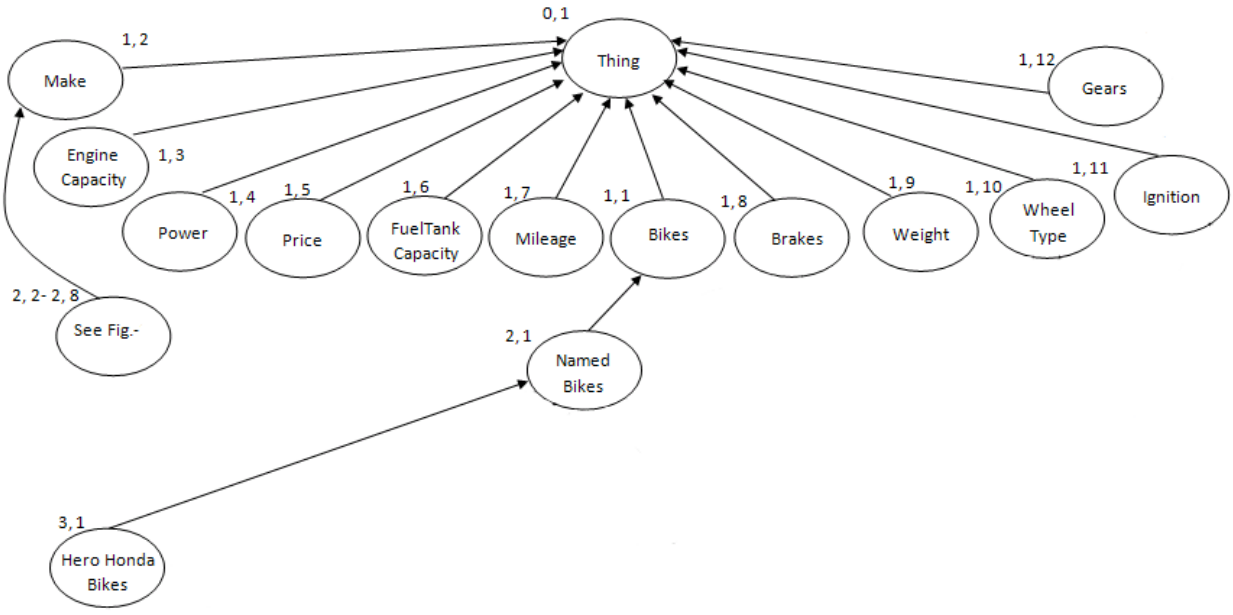

Table18: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0, 1)	X
Bikes (1, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
Make (1, 2)	f^+2
EngineCapacity (1, 3)	f^+3
Power (1, 4)	f^+4
Price (1, 5)	f^+5
FuelTankCapacity (1, 6)	f^+6
Mileage (1, 7)	f^+7
Brakes (1, 8)	f^+8
Weight (1, 9)	f^+9
WheelType (1, 10)	f^+10
Ignition (1,11)	f^+11
Gears (1 ,12)	f^+12
NamedBikes (2, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
HeroHonda (2, 2)	$f^+2 \bullet f^+13$
Hero (2, 3)	$f^+2 \bullet f^+14$
Bajaj (2, 4)	$f^+2 \bullet f^+15$
RoyalEnfield (2, 5)	$f^+2 \bullet f^+16$
Yamaha (2, 6)	$f^+2 \bullet f^+17$
TVS (2, 7)	$f^+2 \bullet f^+18$
Honda (2, 8)	$f^+2 \bullet f^+19$
HeroHondaBikes (3, 1)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13$

10. Following the above methodology, we develop the ontology structure for the following subsequent concepts:

Table19: List of subsequent concepts

CONCEPT NAME	CONCEPT FEATURE	BOOLEAN EQUATION
HeroBikes	$\{ hasMake^+ \} \rightarrow f^+2$ $\{ hasEngineCapacity^+ \} \rightarrow f^+3$ $\{ hasPower^+ \} \rightarrow f^+4$ $\{ hasPrice^+ \} \rightarrow f^+5$ $\{ hasFuelTankCapacity^+ \} \rightarrow f^+6$ $\{ hasMileage^+ \} \rightarrow f^+7$ $\{ hasBrakes^+ \} \rightarrow f^+8$ $\{ hasWeight^+ \} \rightarrow f^+9$ $\{ hasWheelType^+ \} \rightarrow f^+10$ $\{ hasIgnition^+ \} \rightarrow f^+11$ $\{ hasGears^+ \} \rightarrow f^+12$ $\{ hasMake^+ = Hero \} \rightarrow f^+14$	C (HeroBikes): $\{ f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+14 \}$

BajajBikes	{ hasMake$^+$ } → f$^+$2 { hasEngineCapacity$^+$ } → f$^+$3 { hasPower$^+$ } → f$^+$4 { hasPrice$^+$ } → f$^+$5 { hasFuelTankCapacity$^+$ } → f$^+$6 { hasMileage$^+$ } → f$^+$7 { hasBrakes$^+$ } → f$^+$8 { hasWeight$^+$ } → f$^+$9 { hasWheelType$^+$ } → f$^+$10 { hasIgnition$^+$ } → f$^+$11 { hasGears$^+$ } → f$^+$12 { hasMake$^+$ = Bajaj } → f$^+$15	C (BajajBikes): { f$^+$2 • f$^+$3 • f$^+$4 • f$^+$5 • f$^+$6 • f$^+$7 • f$^+$8 • f$^+$9 • f$^+$10 • f$^+$11 • f$^+$12 • f$^+$15 }
RoyalEnfieldBikes	{ hasMake$^+$ } → f$^+$2 { hasEngineCapacity$^+$ } → f$^+$3 { hasPower$^+$ } → f$^+$4 { hasPrice$^+$ } → f$^+$5 { hasFuelTankCapacity$^+$ } → f$^+$6 { hasMileage$^+$ } → f$^+$7 { hasBrakes$^+$ } → f$^+$8 { hasWeight$^+$ } → f$^+$9 { hasWheelType$^+$ } → f$^+$10 { hasIgnition$^+$ } → f$^+$11 { hasGears$^+$ } → f$^+$12 { hasMake$^+$ = RoyalEnfield} → f$^+$16	C (RoyalEnfieldBikes): { f$^+$2 • f$^+$3 • f$^+$4 • f$^+$5 • f$^+$6 • f$^+$7 • f$^+$8 • f$^+$9 • f$^+$10 • f$^+$11 • f$^+$12 • f$^+$16 }
YamahaBikes	{ hasMake$^+$ } → f$^+$2 { hasEngineCapacity$^+$ } → f$^+$3 { hasPower$^+$ } → f$^+$4 { hasPrice$^+$ } → f$^+$5 { hasFuelTankCapacity$^+$ } → f$^+$6 { hasMileage$^+$ } → f$^+$7 { hasBrakes$^+$ } → f$^+$8 { hasWeight$^+$ } → f$^+$9 { hasWheelType$^+$ } → f$^+$10 { hasIgnition$^+$ } → f$^+$11 { hasGears$^+$ } → f$^+$12 { hasMake$^+$ = Yamaha } → f$^+$17	C (YamahaBikes): { f$^+$2 • f$^+$3 • f$^+$4 • f$^+$5 • f$^+$6 • f$^+$7 • f$^+$8 • f$^+$9 • f$^+$10 • f$^+$11 • f$^+$12 • f$^+$17 }
TVSBikes	{ hasMake$^+$ } → f$^+$2 { hasEngineCapacity$^+$ } → f$^+$3 { hasPower$^+$ } → f$^+$4 { hasPrice$^+$ } → f$^+$5 { hasFuelTankCapacity$^+$ } → f$^+$6 { hasMileage$^+$ } → f$^+$7 { hasBrakes$^+$ } → f$^+$8 { hasWeight$^+$ } → f$^+$9 { hasWheelType$^+$ } → f$^+$10 { hasIgnition$^+$ } → f$^+$11	C (TVSBikes): { f$^+$2 • f$^+$3 • f$^+$4 • f$^+$5 • f$^+$6 • f$^+$7 • f$^+$8 • f$^+$9 • f$^+$10 • f$^+$11 • f$^+$12 • f$^+$18 }

	{ hasGears^{+} } → f^{+}12 { hasMake^{+} = TVS } → f^{+}18	
HondaBikes	{ hasMake^{+} } → f^{+}2 { hasEngineCapacity^{+} } → f^{+}3 { hasPower^{+} } → f^{+}4 { hasPrice^{+} } → f^{+}5 { hasFuelTankCapacity^{+} } → f^{+}6 { hasMileage^{+} } → f^{+}7 { hasBrakes^{+} } → f^{+}8 { hasWeight^{+} } → f^{+}9 { hasWheelType^{+} } → f^{+}10 { hasIgnition^{+} } → f^{+}11 { hasGears^{+} } → f^{+}12 { hasMake^{+} = Honda } → f^{+}19	C (HondaBikes): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}19 }

Fig. 49: Modified Ontology structure

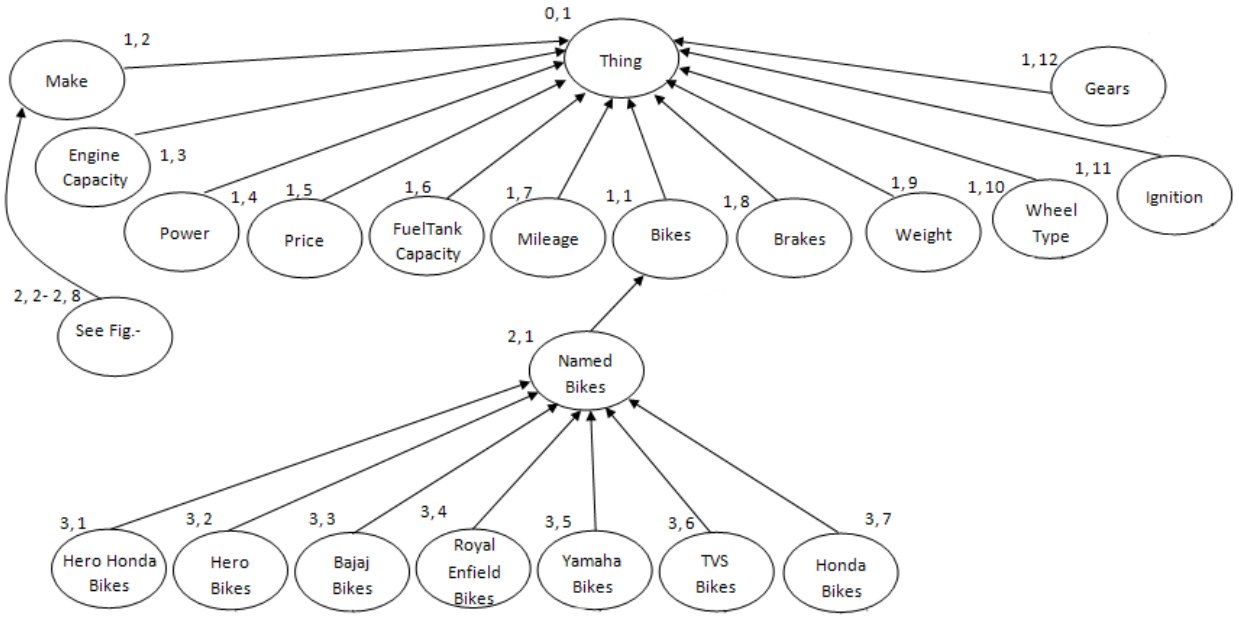

Table20: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0, 1)	X
Bikes (1, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
Make (1, 2)	f^+2
EngineCapacity (1, 3)	f^+3
Power (1, 4)	f^+4
Price (1, 5)	f^+5
FuelTankCapacity (1, 6)	f^+6
Mileage (1, 7)	f^+7
Brakes (1, 8)	f^+8
Weight (1, 9)	f^+9
WheelType (1, 10)	f^+10
Ignition (1,11)	f^+11
Gears (1 ,12)	f^+12
NamedBikes (2, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
HeroHonda (2, 2)	$f^+2 \bullet f^+13$
Hero (2, 3)	$f^+2 \bullet f^+14$
Bajaj (2, 4)	$f^+2 \bullet f^+15$
RoyalEnfield (2, 5)	$f^+2 \bullet f^+16$
Yamaha (2, 6)	$f^+2 \bullet f^+17$
TVS (2, 7)	$f^+2 \bullet f^+18$
Honda (2, 8)	$f^+2 \bullet f^+19$
HeroHondaBikes (3, 1)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13$
HeroBikes (3, 2)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+14$
BajajBikes (3, 3)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+15$
RoyalEnfieldBikes (3, 4)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+16$
YamahaBikes (3, 5)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+17$
TVSBikes (3, 6)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+18$
HondaBikes (3, 7)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+19$

11. Concept encountered: *Combo* with concept features:

$\{hasBrakes^+\} \rightarrow f^+8$

$\{hasBrakes^+ = Combo\} \rightarrow f^+20$

(a.) This can be represented as a Boolean equation as:
C (Combo): $\{ f^+8 \bullet f^+20 \}$

(b.) Matching the above Boolean equation with concepts *Thing*, *Bikes*, *Make*, *EngineCapacity*, *Power*, *Price*, *FuelTankCapacity*, *Mileage*, *Brakes*, *Weight*, *WheelType*,

Ignition, *Gears* and *NamedBikes* in the location map. It is then found that C (Combo): { $f^+8 \bullet f^+20$ } matches C (Brakes): { f^+8}, thus *Combo* is a sub-concept of *Brakes.*

(c.) The location of new concept Combo is (2, 9). The new concept is added to the location (2, 9) in location map as below:

Fig. 50: Modified Ontology structure

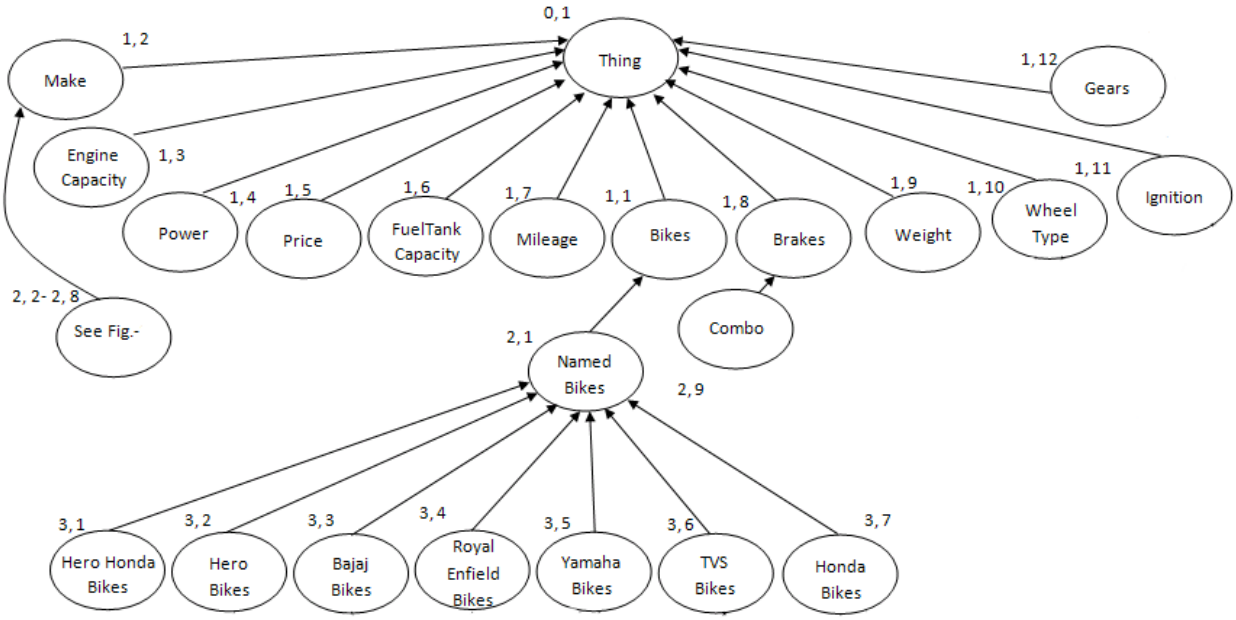

Table21: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0, 1)	X
Bikes (1, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
Make (1, 2)	f^+2
EngineCapacity (1, 3)	f^+3
Power (1, 4)	f^+4
Price (1, 5)	f^+5
FuelTankCapacity (1, 6)	f^+6
Mileage (1, 7)	f^+7
Brakes (1, 8)	f^+8
Weight (1, 9)	f^+9
WheelType (1, 10)	f^+10
Ignition (1,11)	f^+11
Gears (1 ,12)	f^+12
NamedBikes (2, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
HeroHonda (2, 2)	$f^+2 \bullet f^+13$
Hero (2, 3)	$f^+2 \bullet f^+14$

Bajaj (2, 4)	f^+2 • f^+15
RoyalEnfield (2, 5)	f^+2 • f^+16
Yamaha (2, 6)	f^+2 • f^+17
TVS (2, 7)	f^+2 • f^+18
Honda (2, 8)	f^+2 • f^+19
HeroHondaBikes (3, 1)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13
HeroBikes (3, 2)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+14
BajajBikes (3, 3)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+15
RoyalEnfieldBikes (3, 4)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+16
YamahaBikes (3, 5)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+17
TVSBikes (3, 6)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+18
HondaBikes (3, 7)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+19
Combo (2, 9)	f^+8 • f^+20

12. Following the above methodology, we develop the ontology structure for the following subsequent concepts:

Table22: List of subsequent concepts

CONCEPT NAME	CONCEPT FEATURE	BOOLEAN EQUATION
DiskBrakes	$\{hasBrakes^+\} \rightarrow f^+8$ $\{hasBrakes^+ = DiskBrakes\} \rightarrow f^+21$	C (DiskBrakes): $\{f^+8 \bullet f^+21\}$
DrumBrakes	$\{hasBrakes^+\} \rightarrow f^+8$ $\{hasBrakes^+ = DrumBrakes\} \rightarrow f^+22$	C (DrumBrakes): $\{f^+8 \bullet f^+22\}$
Alloy	$\{hasWheelType^+\} \rightarrow f^+10$ $\{hasWheelType^+ = Alloy\} \rightarrow f^+23$	C (Alloy): $\{f^+10 \bullet f^+23\}$
WireSpoke	$\{hasWheelType^+\} \rightarrow f^+10$ $\{hasWheelType^+ = WireSpoke\} \rightarrow f^+24$	C (WireSpoke): $\{f^+10 \bullet f^+24\}$
Self	$\{hasIgnition^+\} \rightarrow f^+11$ $\{hasIgnition^+ = Self\} \rightarrow f^+25$	C (Self): $\{f^+11 \bullet f^+25\}$
Kick	$\{hasIgnition^+\} \rightarrow f^+11$ $\{hasIgnition^+ = Kick\} \rightarrow f^+26$	C (Kick): $\{f^+11 \bullet f^+26\}$
6	$\{hasGears^+\} \rightarrow f^+12$ $\{hasGears^+ = 6\} \rightarrow f^+27$	C (6): $\{f^+12 \bullet f^+27\}$
5	$\{hasGears^+\} \rightarrow f^+12$ $\{hasGears^+ = 5\} \rightarrow f^+28$	C (5): $\{f^+12 \bullet f^+28\}$
4	$\{hasGears^+\} \rightarrow f^+12$ $\{hasGears^+ = 4\} \rightarrow f^+29$	C (4): $\{f^+12 \bullet f^+29\}$

Fig. 51: Modified Ontology structure

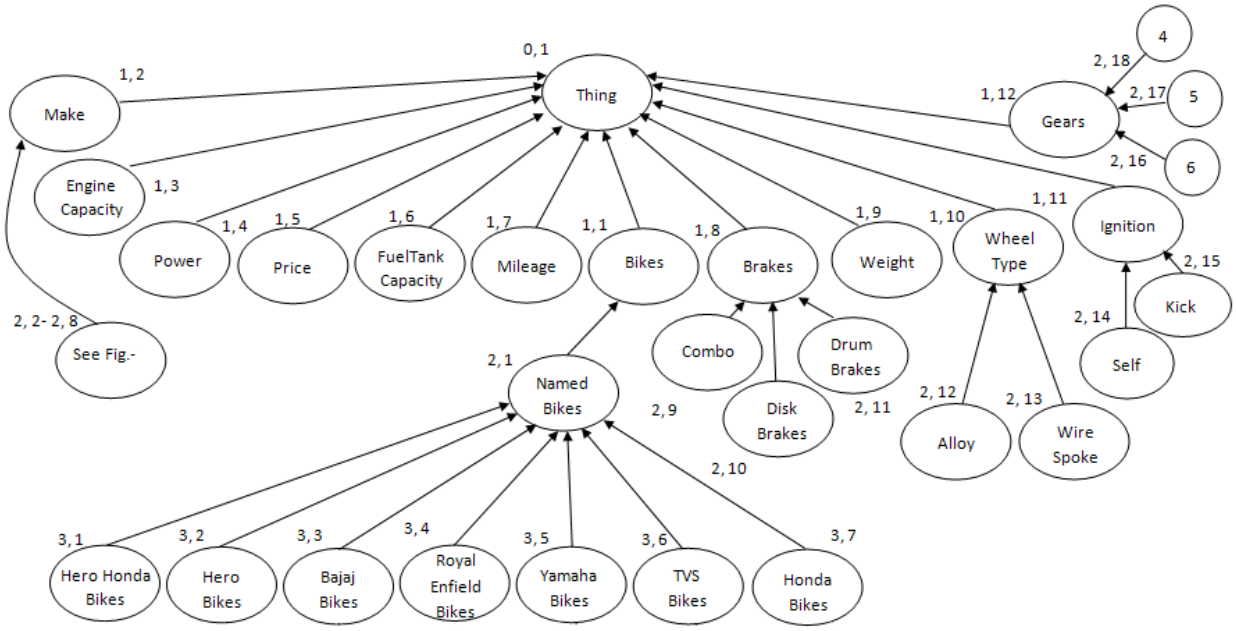

Table23: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0, 1)	X
Bikes (1, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
Make (1, 2)	f^+2
EngineCapacity (1, 3)	f^+3
Power (1, 4)	f^+4
Price (1, 5)	f^+5
FuelTankCapacity (1, 6)	f^+6
Mileage (1, 7)	f^+7
Brakes (1, 8)	f^+8
Weight (1, 9)	f^+9
WheelType (1, 10)	f^+10
Ignition (1,11)	f^+11
Gears (1 ,12)	f^+12
NamedBikes (2, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
HeroHonda (2, 2)	$f^+2 \bullet f^+13$
Hero (2, 3)	$f^+2 \bullet f^+14$
Bajaj (2, 4)	$f^+2 \bullet f^+15$
RoyalEnfield (2, 5)	$f^+2 \bullet f^+16$
Yamaha (2, 6)	$f^+2 \bullet f^+17$
TVS (2, 7)	$f^+2 \bullet f^+18$
Honda (2, 8)	$f^+2 \bullet f^+19$
HeroHondaBikes (3, 1)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13$
HeroBikes (3, 2)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+14$
BajajBikes (3, 3)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+15$

RoyalEnfieldBikes (3, 4)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+16
YamahaBikes (3, 5)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+17
TVSBikes (3, 6)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+18
HondaBikes (3, 7)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+19
Combo (2, 9)	f^+8 • f^+20
DiskBrakes (2, 10)	f^+8 • f^+21
DrumBrakes (2, 11)	f^+8 • f^+22
Alloy (2, 12)	f^+10 • f^+23
WireSpoke (2, 13)	f^+10 • f^+24
Self (2, 14)	f^+11 • f^+25
Kick (2, 15)	f^+11 • f^+26
6 (2, 16)	f^+12 • f^+27
5 (2, 17)	f^+12 • f^+28
4 (2, 18)	f^+12 • f^+29

13. Concept encountered: *Karizma(Normal)Model* with concept features:

$\{ hasMake^+ \} \rightarrow f^+2$

$\{ hasEngineCapacity^+ \} \rightarrow f^+3$

$\{ hasPower^+ \} \rightarrow f^+4$

$\{ hasPrice^+ \} \rightarrow f^+5$

$\{ hasFuelTankCapacity^+ \} \rightarrow f^+6$

$\{ hasMileage^+ \} \rightarrow f^+7$

$\{ hasBrakes^+ \} \rightarrow f^+8$

$\{ hasWeight^+ \} \rightarrow f^+9$

$\{ hasWheelType^+ \} \rightarrow f^+10$

$\{ hasIgnition^+ \} \rightarrow f^+11$

$\{ hasGears^+ \} \rightarrow f^+12$

$\{ hasMake^+ = HeroHonda \} \rightarrow f^+13$

$\{ hasBrakes^+ = Combo \} \rightarrow f^+20$

$\{ hasWheelType^+ = Alloy \} \rightarrow f^+23$

$\{ hasIgnition^+ = Self \} \rightarrow f^+25$

{ hasGears^{+} = 5} → f^{+} 28

(a.) This can be represented as a Boolean equation as:
C (Karizma(Normal)Model): { f^{+} 2 • f^{+} 3 • f^{+} 4 • f^{+} 5 • f^{+} 6 • f^{+} 7 • f^{+} 8 • f^{+} 9 • f^{+} 10 • f^{+} 11 • f^{+} 12 • f^{+} 13 • f^{+} 20 • f^{+} 23 • f^{+} 25 • f^{+} 28}

(b.) Matching the above Boolean equation with concepts in the location map, it is found that C (Karizma(Normal)Model) matches C (HeroHondaBikes), thus Karizma(Normal)Model is a sub-concept of *HeroHondaBikes.*

(c.) The location of new concept Karizma(Normal)Model is (4, 1). The new concept is added to the location (4, 1) in location map as below:

Fig. 52: Modified Ontology structure

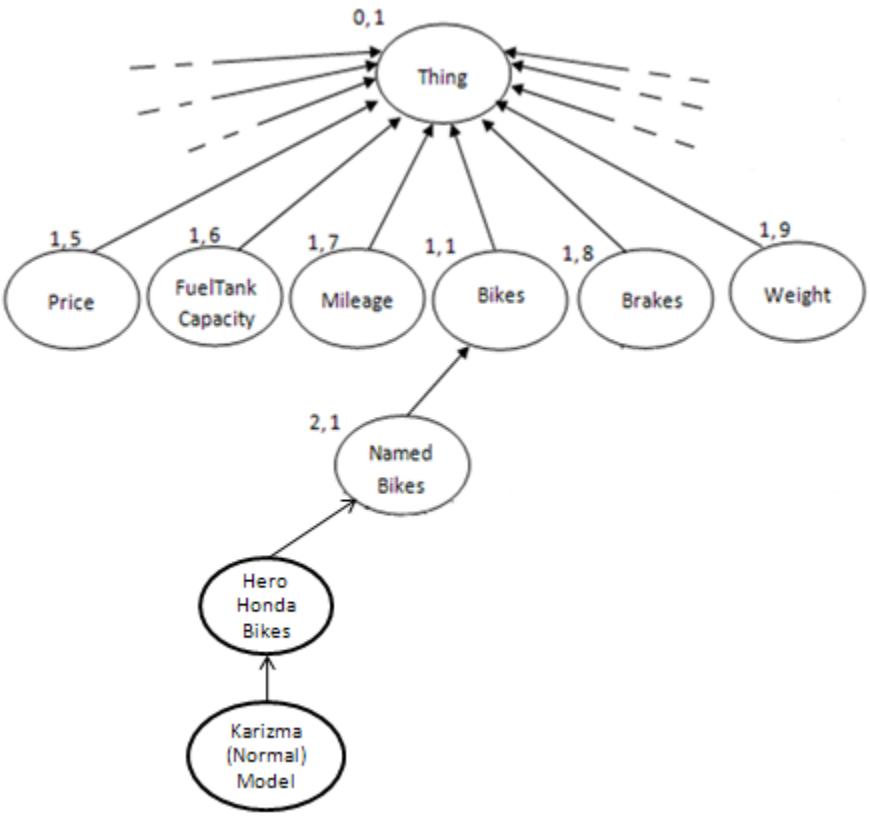

Table24: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0, 1)	X
Bikes (1, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
Make (1, 2)	f^+2
EngineCapacity (1, 3)	f^+3
Power (1, 4)	f^+4
Price (1, 5)	f^+5
FuelTankCapacity (1, 6)	f^+6
Mileage (1, 7)	f^+7
Brakes (1, 8)	f^+8
Weight (1, 9)	f^+9
WheelType (1, 10)	f^+10
Ignition (1,11)	f^+11
Gears (1 ,12)	f^+12
NamedBikes (2, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
HeroHonda (2, 2)	$f^+2 \bullet f^+13$
Hero (2, 3)	$f^+2 \bullet f^+14$
Bajaj (2, 4)	$f^+2 \bullet f^+15$
RoyalEnfield (2, 5)	$f^+2 \bullet f^+16$
Yamaha (2, 6)	$f^+2 \bullet f^+17$
TVS (2, 7)	$f^+2 \bullet f^+18$
Honda (2, 8)	$f^+2 \bullet f^+19$
HeroHondaBikes (3, 1)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13$
HeroBikes (3, 2)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+14$
BajajBikes (3, 3)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+15$
RoyalEnfieldBikes (3, 4)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+16$
YamahaBikes (3, 5)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+17$
TVSBikes (3, 6)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+18$
HondaBikes (3, 7)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+19$
Combo (2, 9)	$f^+8 \bullet f^+20$
DiskBrakes (2, 10)	$f^+8 \bullet f^+21$
DrumBrakes (2, 11)	$f^+8 \bullet f^+22$
Alloy (2, 12)	$f^+10 \bullet f^+23$
WireSpoke (2, 13)	$f^+10 \bullet f^+24$
Self (2, 14)	$f^+11 \bullet f^+25$
Kick (2, 15)	$f^+11 \bullet f^+26$
6 (2, 16)	$f^+12 \bullet f^+27$
5 (2, 17)	$f^+12 \bullet f^+28$
4 (2, 18)	$f^+12 \bullet f^+29$
Karizma(Normal)Model (4, 1)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+20 \bullet f^+23 \bullet f^+25 \bullet f^+28$

14. Concept encountered: *Karizma(ZMR)Model* with concept features:

{ $hasMake^{+}$ } → f^{+} 2

{ $hasEngineCapacity^{+}$ } → f^{+} 3

{ $hasPower^{+}$ } → f^{+} 4

{ $hasPrice^{+}$ } → f^{+} 5

{ $hasFuelTankCapacity^{+}$ } → f^{+} 6

{ $hasMileage^{+}$ } → f^{+} 7

{ $hasBrakes^{+}$ } → f^{+} 8

{ $hasWeight^{+}$ } → f^{+} 9

{ $hasWheelType^{+}$ } → f^{+} 10

{ $hasIgnition^{+}$ } → f^{+} 11

{ $hasGears^{+}$ } → f^{+} 12

{ $hasMake^{+}$ = HeroHonda } → f^{+} 13

{ $hasBrakes^{+}$ = DiskBrakes } → f^{+} 21

{ $hasWheelType^{+}$ = Alloy} → f^{+} 23

{ $hasIgnition^{+}$ = Self} → f^{+} 25

{ $hasGears^{+}$ = 5} → f^{+} 28

(a.) This can be represented as a Boolean equation as:
C (Karizma(ZMR)Model): { $f^{+}2 \bullet f^{+}3 \bullet f^{+}4 \bullet f^{+}5 \bullet f^{+}6 \bullet f^{+}7 \bullet f^{+}8 \bullet f^{+}9 \bullet f^{+}10 \bullet f^{+}11 \bullet f^{+}12 \bullet f^{+}13 \bullet f^{+}21 \bullet f^{+}23 \bullet f^{+}25 \bullet f^{+}28$}

(b.) Matching the above Boolean equation with concepts in the location map, it is found that C (Karizma(ZMR)Model) matches C (HeroHondaBikes), thus Karizma(ZMR)Model is a sub-concept of *HeroHondaBikes* and a brother concept of *Karizma(Normal)Model*.

(c.) The location of new concept Karizma(ZMR)Model is (4, 2). The new concept is added to the location (4, 2) in location map as below:

Fig. 53: Modified Ontology structure

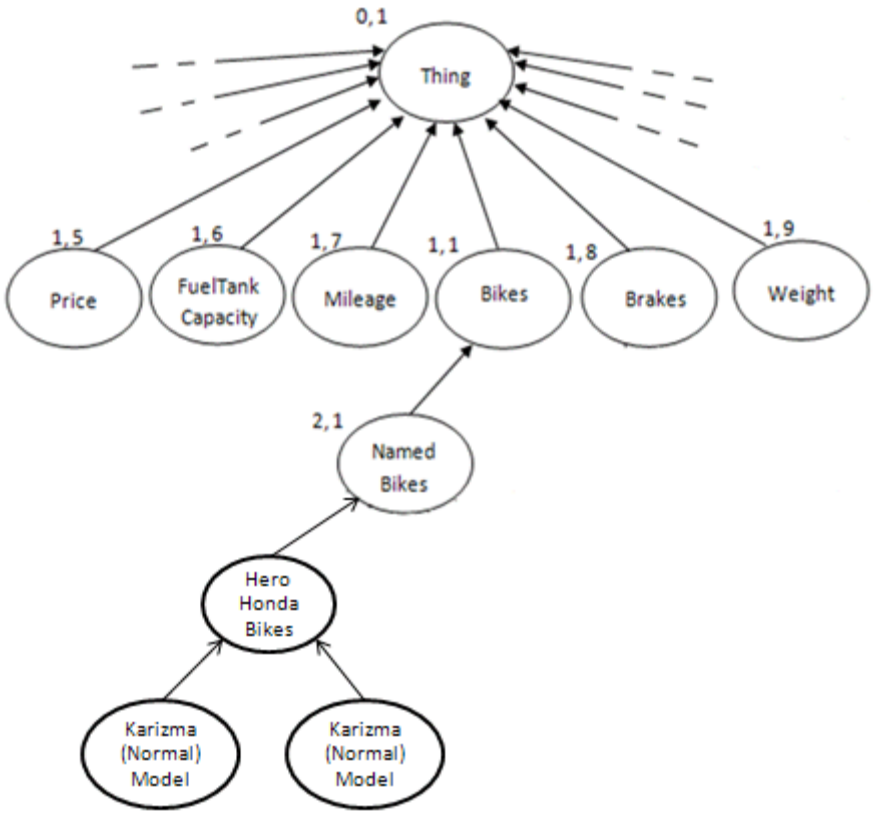

Table25: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0, 1)	X
Bikes (1, 1)	f^+1 • f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12
Make (1, 2)	f^+2
EngineCapacity (1, 3)	f^+3
Power (1, 4)	f^+4
Price (1, 5)	f^+5
FuelTankCapacity (1, 6)	f^+6
Mileage (1, 7)	f^+7
Brakes (1, 8)	f^+8
Weight (1, 9)	f^+9
WheelType (1, 10)	f^+10
Ignition (1,11)	f^+11
Gears (1 ,12)	f^+12
NamedBikes (2, 1)	f^+1 • f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12
HeroHonda (2, 2)	f^+2 • f^+13
Hero (2, 3)	f^+2 • f^+14
Bajaj (2, 4)	f^+2 • f^+15
RoyalEnfield (2, 5)	f^+2 • f^+16

Yamaha (2, 6)	f^+2 • f^+17
TVS (2, 7)	f^+2 • f^+18
Honda (2, 8)	f^+2 • f^+19
HeroHondaBikes (3, 1)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13
HeroBikes (3, 2)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+14
BajajBikes (3, 3)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+15
RoyalEnfieldBikes (3, 4)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+16
YamahaBikes (3, 5)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+17
TVSBikes (3, 6)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+18
HondaBikes (3, 7)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+19
Combo (2, 9)	f^+8 • f^+20
DiskBrakes (2, 10)	f^+8 • f^+21
DrumBrakes (2, 11)	f^+8 • f^+22
Alloy (2, 12)	f^+10 • f^+23
WireSpoke (2, 13)	f^+10 • f^+24
Self (2, 14)	f^+11 • f^+25
Kick (2, 15)	f^+11 • f^+26
6 (2, 16)	f^+12 • f^+27
5 (2, 17)	f^+12 • f^+28
4 (2, 18)	f^+12 • f^+29
Karizma(Normal)Model (4, 1)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+20 • f^+23 • f^+25 • f^+28
Karizma(ZMR)Model (4, 2)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+21 • f^+23 • f^+25 • f^+28

15. Following the above methodology, we develop the ontology structure for the following subsequent concepts:

Table26: List of subsequent concepts

CONCEPT NAME	CONCEPT FEATURE	BOOLEAN EQUATION
Splendor(Plus)Model	{ $hasMake^+$ } → f^+2 { $hasEngineCapacity^+$ } → f^+3 { $hasPower^+$ } → f^+4 { $hasPrice^+$ } → f^+5 { $hasFuelTankCapacity^+$ } → f^+6 { $hasMileage^+$ } → f^+7 { $hasBrakes^+$ } → f^+8 { $hasWeight^+$ } → f^+9 { $hasWheelType^+$ } → f^+10 { $hasIgnition^+$ } → f^+11 { $hasGears^+$ } → f^+12 { $hasMake^+$ = HeroHonda } → f^+13 { $hasBrakes^+$ =DrumBrakes} → f^+22 { $hasWheelType^+$ =WireSpoke} → f^+24 { $hasIgnition^+$ =Kick} → f^+26	C (Splendor(Plus)Model): { f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+22 • f^+24 • f^+26 • f^+29 }

	{ $hasGears^+$ =4} → f^+ 29	
Splendor(NXG)Model	{ $hasMake^+$ } → f^+ 2 { $hasEngineCapacity^+$ } → f^+ 3 { $hasPower^+$ } → f^+ 4 { $hasPrice^+$ } → f^+ 5 { $hasFuelTankCapacity^+$ } → f^+ 6 { $hasMileage^+$ } → f^+ 7 { $hasBrakes^+$ } → f^+ 8 { $hasWeight^+$ } → f^+ 9 { $hasWheelType^+$ } → f^+ 10 { $hasIgnition^+$ } → f^+ 11 { $hasGears^+$ } → f^+ 12 { $hasMake^+$ = HeroHonda } → f^+ 13 { $hasBrakes^+$ =DrumBrakes} → f^+ 22 { $hasWheelType^+$ =Alloy} → f^+ 23 { $hasIgnition^+$ =Kick} → f^+ 26 { $hasGears^+$ =4} → f^+ 29	C (Splendor(NXG)Model): { f^+ 2 • f^+ 3 • f^+ 4 • f^+ 5 • f^+ 6 • f^+ 7 • f^+ 8 • f^+ 9 • f^+ 10 • f^+ 11 • f^+ 12 • f^+ 13 • f^+ 23 • f^+ 23 • f^+ 26 • f^+ 29 }
Splendor(Super)Model	{ $hasMake^+$ } → f^+ 2 { $hasEngineCapacity^+$ } → f^+ 3 { $hasPower^+$ } → f^+ 4 { $hasPrice^+$ } → f^+ 5 { $hasFuelTankCapacity^+$ } → f^+ 6 { $hasMileage^+$ } → f^+ 7 { $hasBrakes^+$ } → f^+ 8 { $hasWeight^+$ } → f^+ 9 { $hasWheelType^+$ } → f^+ 10 { $hasIgnition^+$ } → f^+ 11 { $hasGears^+$ } → f^+ 12 { $hasMake^+$ = HeroHonda } → f^+ 13 { $hasBrakes^+$ =DrumBrakes} → f^+ 22 { $hasWheelType^+$ =Alloy} → f^+ 23 { $hasIgnition^+$ =Self} → f^+ 25 { $hasGears^+$ =4} → f^+ 29	C (Splendor(Super)Model): { f^+ 2 • f^+ 3 • f^+ 4 • f^+ 5 • f^+ 6 • f^+ 7 • f^+ 8 • f^+ 9 • f^+ 10 • f^+ 11 • f^+ 12 • f^+ 13 • f^+ 22 • f^+ 23 • f^+ 25 • f^+ 29 }
Splendor(Pro)Model	{ $hasMake^+$ } → f^+ 2 { $hasEngineCapacity^+$ } → f^+ 3 { $hasPower^+$ } → f^+ 4 { $hasPrice^+$ } → f^+ 5 { $hasFuelTankCapacity^+$ } → f^+ 6 { $hasMileage^+$ } → f^+ 7 { $hasBrakes^+$ } → f^+ 8 { $hasWeight^+$ } → f^+ 9 { $hasWheelType^+$ } → f^+ 10 { $hasIgnition^+$ } → f^+ 11 { $hasGears^+$ } → f^+ 12 { $hasMake^+$ = HeroHonda } → f^+ 13 { $hasBrakes^+$ = DrumBrakes} → f^+ 22 { $hasWheelType^+$ = Alloy} → f^+ 23 { $hasIgnition^+$ = Self} → f^+ 25 { $hasGears^+$ = 4} → f^+ 29	C (Splendor(Pro)Model): { f^+ 2 • f^+ 3 • f^+ 4 • f^+ 5 • f^+ 6 • f^+ 7 • f^+ 8 • f^+ 9 • f^+ 10 • f^+ 11 • f^+ 12 • f^+ 13 • f^+ 22 • f^+ 23 • f^+ 25 • f^+ 29 }
PassionProModel	{ $hasMake^+$ } → f^+ 2	C (PassionProModel):

	{ hasEngineCapacity$^+$ } → f^+3 { hasPower$^+$ } → f^+4 { hasPrice$^+$ } → f^+5 { hasFuelTankCapacity$^+$ } → f^+6 { hasMileage$^+$ } → f^+7 { hasBrakes$^+$ } → f^+8 { hasWeight$^+$ } → f^+9 { hasWheelType$^+$ } → f^+10 { hasIgnition$^+$ } → f^+11 { hasGears$^+$ } → f^+12 { hasMake$^+$ = HeroHonda } → f^+13 { hasBrakes$^+$ = Combo} → f^+20 { hasWheelType$^+$ = Alloy} → f^+23 { hasIgnition$^+$ = Self} → f^+25 { hasGears$^+$ = 4} → f^+29	{ f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+20 • f^+23 • f^+25 • f^+29 }
CD-DawnModel	{ hasMake$^+$ } → f^+2 { hasEngineCapacity$^+$ } → f^+3 { hasPower$^+$ } → f^+4 { hasPrice$^+$ } → f^+5 { hasFuelTankCapacity$^+$ } → f^+6 { hasMileage$^+$ } → f^+7 { hasBrakes$^+$ } → f^+8 { hasWeight$^+$ } → f^+9 { hasWheelType$^+$ } → f^+10 { hasIgnition$^+$ } → f^+11 { hasGears$^+$ } → f^+12 { hasMake$^+$ = HeroHonda } → f^+13 { hasBrakes$^+$ = DrumBrakes} → f^+22 { hasWheelType$^+$ = WireSpoke} → f^+24 { hasIgnition$^+$ = Kick} → f^+26 { hasGears$^+$ =4} → f^+29	C (CD-DawnModel): { f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+22 • f^+24 • f^+26 • f^+29 }
CD-DeluxeModel	{ hasMake$^+$ } → f^+2 { hasEngineCapacity$^+$ } → f^+3 { hasPower$^+$ } → f^+4 { hasPrice$^+$ } → f^+5 { hasFuelTankCapacity$^+$ } → f^+6 { hasMileage$^+$ } → f^+7 { hasBrakes$^+$ } → f^+8 { hasWeight$^+$ } → f^+9 { hasWheelType$^+$ } → f^+10 { hasIgnition$^+$ } → f^+11 { hasGears$^+$ } → f^+12 { hasMake$^+$ = HeroHonda } → f^+13 { hasBrakes$^+$ = DrumBrakes} → f^+22 { hasWheelType$^+$ = Alloy} → f^+23 { hasIgnition$^+$ =Kick} → f^+26 { hasGears$^+$ = 4} → f^+29	C (CD-DeluxeModel): { f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+22 • f^+23 • f^+26 • f^+29 }
Glamour(Normal)Model	{ hasMake$^+$ } → f^+2 { hasEngineCapacity$^+$ } → f^+3	C (Glamour(Normal)Model): { f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 •

	{ hasPower$^+$ } → f^+ 4 { hasPrice$^+$ } → f^+ 5 { hasFuelTankCapacity$^+$ } → f^+ 6 { hasMileage$^+$ } → f^+ 7 { hasBrakes$^+$ } → f^+ 8 { hasWeight$^+$ } → f^+ 9 { hasWheelType$^+$ } → f^+ 10 { hasIgnition$^+$ } → f^+ 11 { hasGears$^+$ } → f^+ 12 { hasMake$^+$ = HeroHonda } → f^+ 13 { hasBrakes$^+$ =Combo} → f^+ 20 { hasWheelType$^+$ =Alloy} → f^+ 23 { hasIgnition$^+$ = Self} → f^+ 25 { hasGears$^+$ = 4} → f^+ 29	f^+ 8 • f^+ 9 • f^+ 10 • f^+ 11 • f^+ 12 • f^+ 13 • f^+ 20 • f^+ 23 • f^+ 25 • f^+ 29 }
Glamour(PGMFi)Model	{ hasMake$^+$ } → f^+ 2 { hasEngineCapacity$^+$ } → f^+ 3 { hasPower$^+$ } → f^+ 4 { hasPrice$^+$ } → f^+ 5 { hasFuelTankCapacity$^+$ } → f^+ 6 { hasMileage$^+$ } → f^+ 7 { hasBrakes$^+$ } → f^+ 8 { hasWeight$^+$ } → f^+ 9 { hasWheelType$^+$ } → f^+ 10 { hasIgnition$^+$ } → f^+ 11 { hasGears$^+$ } → f^+ 12 { hasMake$^+$ = HeroHonda } → f^+ 13 { hasBrakes$^+$ =Combo} → f^+ 20 { hasWheelType$^+$ =Alloy} → f^+ 23 { hasIgnition$^+$ = Self} → f^+ 25 { hasGears$^+$ = 4} → f^+ 29	C (Glamour(PGMFi)Model): { f^+ 2 • f^+ 3 • f^+ 4 • f^+ 5 • f^+ 6 • f^+ 7 • f^+ 8 • f^+ 9 • f^+ 10 • f^+ 11 • f^+ 12 • f^+ 13 • f^+ 20 • f^+ 23 • f^+ 25 • f^+ 29 }
AchieverModel	{ hasMake$^+$ } → f^+ 2 { hasEngineCapacity$^+$ } → f^+ 3 { hasPower$^+$ } → f^+ 4 { hasPrice$^+$ } → f^+ 5 { hasFuelTankCapacity$^+$ } → f^+ 6 { hasMileage$^+$ } → f^+ 7 { hasBrakes$^+$ } → f^+ 8 { hasWeight$^+$ } → f^+ 9 { hasWheelType$^+$ } → f^+ 10 { hasIgnition$^+$ } → f^+ 11 { hasGears$^+$ } → f^+ 12 { hasMake$^+$ = HeroHonda } → f^+ 13 { hasBrakes$^+$ =Combo} → f^+ 20 { hasWheelType$^+$ =Alloy} → f^+ 23 { hasIgnition$^+$ = Self} → f^+ 25 { hasGears$^+$ = 5} → f^+ 28	C (AchieverModel): { f^+ 2 • f^+ 3 • f^+ 4 • f^+ 5 • f^+ 6 • f^+ 7 • f^+ 8 • f^+ 9 • f^+ 10 • f^+ 11 • f^+ 12 • f^+ 13 • f^+ 20 • f^+ 23 • f^+ 25 • f^+ 28 }
CBZXtremeModel	{ hasMake$^+$ } → f^+ 2 { hasEngineCapacity$^+$ } → f^+ 3 { hasPower$^+$ } → f^+ 4 { hasPrice$^+$ } → f^+ 5	C (CNZXtremeModel): { f^+ 2 • f^+ 3 • f^+ 4 • f^+ 5 • f^+ 6 • f^+ 7 • f^+ 8 • f^+ 9 • f^+ 10 • f^+ 11 • f^+ 12 • f^+ 13 • f^+ 20 • f^+ 23 • f^+ 25 • f^+ 28 }

	{ hasFuelTankCapacity$^+$ } → f^+6 { hasMileage$^+$ } → f^+7 { hasBrakes$^+$ } → f^+8 { hasWeight$^+$ } → f^+9 { hasWheelType$^+$ } → f^+10 { hasIgnition$^+$ } → f^+11 { hasGears$^+$ } → f^+12 { hasMake$^+$ = HeroHonda } → f^+13 { hasBrakes$^+$ = Combo} → f^+20 { hasWheelType$^+$ = Alloy} → f^+23 { hasIgnition$^+$ = Self} → f^+25 { hasGears$^+$ = 5} → f^+28	
HunkModel	{ hasMake$^+$ } → f^+2 { hasEngineCapacity$^+$ } → f^+3 { hasPower$^+$ } → f^+4 { hasPrice$^+$ } → f^+5 { hasFuelTankCapacity$^+$ } → f^+6 { hasMileage$^+$ } → f^+7 { hasBrakes$^+$ } → f^+8 { hasWeight$^+$ } → f^+9 { hasWheelType$^+$ } → f^+10 { hasIgnition$^+$ } → f^+11 { hasGears$^+$ } → f^+12 { hasMake$^+$ = HeroHonda } → f^+13 { hasBrakes$^+$ = Disk} → f^+21 { hasWheelType$^+$ = Alloy} → f^+23 { hasIgnition$^+$ =Self} → f^+25 { hasGears$^+$ =5} → f^+28	C (HunkModel): { f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+21 • f^+23 • f^+25 • f^+28 }

Fig. 54: Modified Ontology structure

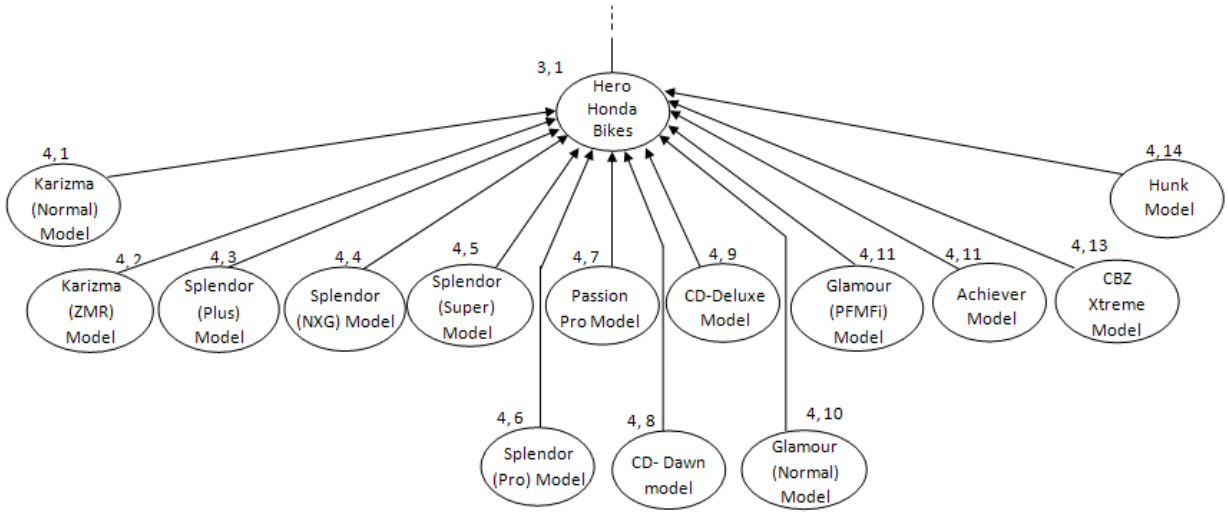

Table27: Modified Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0, 1)	X
Bikes (1, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
Make (1, 2)	f^+2
EngineCapacity (1, 3)	f^+3
Power (1, 4)	f^+4
Price (1, 5)	f^+5
FuelTankCapacity (1, 6)	f^+6
Mileage (1, 7)	f^+7
Brakes (1, 8)	f^+8
Weight (1, 9)	f^+9
WheelType (1, 10)	f^+10
Ignition (1,11)	f^+11
Gears (1 ,12)	f^+12
NamedBikes (2, 1)	$f^+1 \bullet f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12$
HeroHonda (2, 2)	$f^+2 \bullet f^+13$
Hero (2, 3)	$f^+2 \bullet f^+14$
Bajaj (2, 4)	$f^+2 \bullet f^+15$
RoyalEnfield (2, 5)	$f^+2 \bullet f^+16$
Yamaha (2, 6)	$f^+2 \bullet f^+17$
TVS (2, 7)	$f^+2 \bullet f^+18$
Honda (2, 8)	$f^+2 \bullet f^+19$
HeroHondaBikes (3, 1)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13$
HeroBikes (3, 2)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+14$
BajajBikes (3, 3)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+15$
RoyalEnfieldBikes (3, 4)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+16$
YamahaBikes (3, 5)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+17$

TVSBikes (3, 6)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+18$
HondaBikes (3, 7)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+19$
Combo (2, 9)	$f^+8 \bullet f^+20$
DiskBrakes (2, 10)	$f^+8 \bullet f^+21$
DrumBrakes (2, 11)	$f^+8 \bullet f^+22$
Alloy (2, 12)	$f^+10 \bullet f^+23$
WireSpoke (2, 13)	$f^+10 \bullet f^+24$
Self (2, 14)	$f^+11 \bullet f^+25$
Kick (2, 15)	$f^+11 \bullet f^+26$
6 (2, 16)	$f^+12 \bullet f^+27$
5 (2, 17)	$f^+12 \bullet f^+28$
4 (2, 18)	$f^+12 \bullet f^+29$
Karizma(Normal)Model (4, 1)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+20 \bullet f^+23 \bullet f^+25 \bullet f^+28$
Karizma(ZMR)Model (4, 2)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+21 \bullet f^+23 \bullet f^+25 \bullet f^+28$
Splendor(Plus)Model (4, 3)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+22 \bullet f^+24 \bullet f^+26 \bullet f^+29$
Splendor(NXG)Model (4, 4)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+23 \bullet f^+23 \bullet f^+26 \bullet f^+29$
Splendor(Super)Model (4, 5)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+22 \bullet f^+23 \bullet f^+25 \bullet f^+29$
Splendor(Pro)Model (4, 6)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+22 \bullet f^+23 \bullet f^+25 \bullet f^+29$
PassionProModel (4, 7)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+20 \bullet f^+23 \bullet f^+25 \bullet f^+29$
CD-DawnModel (4, 8)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+22 \bullet f^+24 \bullet f^+26 \bullet f^+29$
CD-DeluxeModel (4, 9)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+22 \bullet f^+23 \bullet f^+26 \bullet f^+29$
Glamour(Normal)Model (4, 10)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+20 \bullet f^+23 \bullet f^+25 \bullet f^+29$
Glamour(PGMFi)Model (4, 11)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+20 \bullet f^+23 \bullet f^+25 \bullet f^+29$
AchieverModel (4, 12)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+20 \bullet f^+23 \bullet f^+25 \bullet f^+28$
CBZXtremeModel (4, 13)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+20 \bullet f^+23 \bullet f^+25 \bullet f^+28$
HunkModel (4, 14)	$f^+2 \bullet f^+3 \bullet f^+4 \bullet f^+5 \bullet f^+6 \bullet f^+7 \bullet f^+8 \bullet f^+9 \bullet f^+10 \bullet f^+11 \bullet f^+12 \bullet f^+13 \bullet f^+21 \bullet f^+23 \bullet f^+25 \bullet f^+28$

16. So building the ontology structure for all remaining concepts, based on the above methodology:

Table28: List of subsequent concepts

CONCEPT NAME	CONCEPT FEATURE	BOOLEAN EQUATION
ImpulseModel	{ $hasMake^+$ = Hero} → f^+ 14 { $hasBrakes^+$ =Combo} → f^+ 20 { $hasWheelType^+$ = Alloy} → f^+ 23 { $hasIgnition^+$ = Self} → f^+ 25 { $hasGears^+$ = 5} → f^+ 28	C (ImpulseModel): { $f^+2 \cdot f^+3 \cdot f^+4 \cdot f^+5 \cdot f^+6 \cdot f^+7 \cdot f^+8 \cdot f^+9 \cdot f^+10 \cdot f^+11 \cdot f^+12 \cdot f^+14 \cdot f^+20 \cdot f^+23 \cdot f^+25 \cdot f^+28$ }
CT100Model	{ $hasMake^+$ = Bajaj} → f^+ 15 { $hasBrakes^+$ = DrumBrakes} → f^+ 22 { $hasWheelType^+$ = WireSpoke} → f^+ 24 { $hasIgnition^+$ = Kick} → f^+ 26 { $hasGears^+$ = 4} → f^+ 29	C (CT100Model): { $f^+2 \cdot f^+3 \cdot f^+4 \cdot f^+5 \cdot f^+6 \cdot f^+7 \cdot f^+8 \cdot f^+9 \cdot f^+10 \cdot f^+11 \cdot f^+12 \cdot f^+15 \cdot f^+22 \cdot f^+24 \cdot f^+26 \cdot f^+29$ }
Pulsar135LSModel	{ $hasMake^+$ = Bajaj} → f^+ 15 { $hasBrakes^+$ =Combo} → f^+ 20 { $hasWheelType^+$ = Alloy} → f^+ 23 { $hasIgnition^+$ = Self} → f^+ 25 { $hasGears^+$ = 5} → f^+ 28	C (Pulsar135LSModel): { $f^+2 \cdot f^+3 \cdot f^+4 \cdot f^+5 \cdot f^+6 \cdot f^+7 \cdot f^+8 \cdot f^+9 \cdot f^+10 \cdot f^+11 \cdot f^+12 \cdot f^+15 \cdot f^+20 \cdot f^+23 \cdot f^+25 \cdot f^+28$ }
Pulsar150DTS-iModel	{ $hasMake^+$ = Bajaj} → f^+ 15 { $hasBrakes^+$ =Combo} → f^+ 20 { $hasWheelType^+$ = Alloy} → f^+ 23 { $hasIgnition^+$ = Self} → f^+ 25 { $hasGears^+$ = 5} → f^+ 28	C (Pulsar150DTS-iModel): { $f^+2 \cdot f^+3 \cdot f^+4 \cdot f^+5 \cdot f^+6 \cdot f^+7 \cdot f^+8 \cdot f^+9 \cdot f^+10 \cdot f^+11 \cdot f^+12 \cdot f^+15 \cdot f^+20 \cdot f^+23 \cdot f^+25 \cdot f^+28$ }
Pulsar180DTS-iModel	{ $hasMake^+$ = Bajaj} → f^+ 15 { $hasBrakes^+$ =Combo} → f^+ 20 { $hasWheelType^+$ = Alloy} → f^+ 23 { $hasIgnition^+$ = Self} → f^+ 25 { $hasGears^+$ = 5} → f^+ 28	C (Pulsar180DTS-iModel): { $f^+2 \cdot f^+3 \cdot f^+4 \cdot f^+5 \cdot f^+6 \cdot f^+7 \cdot f^+8 \cdot f^+9 \cdot f^+10 \cdot f^+11 \cdot f^+12 \cdot f^+15 \cdot f^+20 \cdot f^+23 \cdot f^+25 \cdot f^+28$ }
Pulsar220DTS-iModel	{ $hasMake^+$ = Bajaj} → f^+ 15 { $hasBrakes^+$ =DiskBrakes} → f^+ 21 { $hasWheelType^+$ = Alloy} → f^+ 23 { $hasIgnition^+$ = Self} → f^+ 25 { $hasGears^+$ = 5} → f^+ 28	C (Pulsar220DTS-iModel): { $f^+2 \cdot f^+3 \cdot f^+4 \cdot f^+5 \cdot f^+6 \cdot f^+7 \cdot f^+8 \cdot f^+9 \cdot f^+10 \cdot f^+11 \cdot f^+12 \cdot f^+15 \cdot f^+21 \cdot f^+23 \cdot f^+25 \cdot f^+28$ }
Avenger220DTS-iModel	{ $hasMake^+$ = Bajaj} → f^+ 15 { $hasBrakes^+$ =Combo} → f^+ 20 { $hasWheelType^+$ = Alloy} → f^+ 23 { $hasIgnition^+$ = Self} → f^+ 25 { $hasGears^+$ = 5} → f^+ 28	C (Pulsar220DTS-iModel): { $f^+2 \cdot f^+3 \cdot f^+4 \cdot f^+5 \cdot f^+6 \cdot f^+7 \cdot f^+8 \cdot f^+9 \cdot f^+10 \cdot f^+11 \cdot f^+12 \cdot f^+15 \cdot f^+20 \cdot f^+23 \cdot f^+25 \cdot f^+28$ }
Discover135Model	{ $hasMake^+$ = Bajaj} → f^+ 15 { $hasBrakes^+$ =Combo} → f^+ 20	C (Pulsar220DTS-iModel): { $f^+2 \cdot f^+3 \cdot f^+4 \cdot f^+5 \cdot f^+6 \cdot$

	{ hasWheelType^{+} = Alloy} → f^{+}23 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 4} → f^{+}29	f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}15 • f^{+}20 • f^{+}23 • f^{+}25 • f^{+}29 }
Discover125Model	{ hasMake^{+} = Bajaj} → f^{+}15 { hasBrakes^{+} = DrumBrakes} → f^{+}22 { hasWheelType^{+} = Alloy} → f^{+}23 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 5} → f^{+}28	C (Pulsar220DTS-iModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}15 • f^{+}22 • f^{+}23 • f^{+}25 • f^{+}28 }
Discover100Model	{ hasMake^{+} = Bajaj} → f^{+}15 { hasBrakes^{+} = DrumBrakes} → f^{+}22 { hasWheelType^{+} = Alloy} → f^{+}23 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 4} → f^{+}29	C (Pulsar220DTS-iModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}15 • f^{+}22 • f^{+}23 • f^{+}25 • f^{+}29 }
Platina100Model	{ hasMake^{+} = Bajaj} → f^{+}15 { hasBrakes^{+} = DrumBrakes} → f^{+}22 { hasWheelType^{+} = Alloy} → f^{+}23 { hasIgnition^{+} = Kick} → f^{+}26 { hasGears^{+} = 4} → f^{+}29	C (Pulsar220DTS-iModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}15 • f^{+}22 • f^{+}23 • f^{+}26 • f^{+}29 }
Duke200Model	{ hasMake^{+} = Bajaj} → f^{+}15 { hasBrakes^{+} =DiskBrakes} → f^{+}21 { hasWheelType^{+} = Alloy} → f^{+}23 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 6} → f^{+}27	C (Pulsar220DTS-iModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}15 • f^{+}21 • f^{+}23 • f^{+}25 • f^{+}27 }
BulletElectraTwinspark Model	{ hasMake^{+} = RoyalEnfield} → f^{+}16 { hasBrakes^{+} = Combo} → f^{+}20 { hasWheelType^{+} = Wirespoke} → f^{+}24 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 5} → f^{+}28	C (BulletElectraTwinsparkModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}25 • f^{+}28 }
Bullet 350 Twinspark Model	{ hasMake^{+} = RoyalEnfield} → f^{+}16 { hasBrakes^{+} = Combo} → f^{+}20 { hasWheelType^{+} = Wirespoke} → f^{+}24 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 5} → f^{+}28	C (Bullet350TwinsparkModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}25 • f^{+}28 }
Bullet Electra EFI Model	{ hasMake^{+} = RoyalEnfield} → f^{+}16 { hasBrakes^{+} = Combo} → f^{+}20 { hasWheelType^{+} = Wirespoke} → f^{+}24 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 5} → f^{+}28	C (BulletElectraEFIModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}25 • f^{+}28 }
Bullet Electra Deluxe Model	{ hasMake^{+} = RoyalEnfield} → f^{+}16 { hasBrakes^{+} = Combo} → f^{+}20 { hasWheelType^{+} = Wirespoke} → f^{+}24	C (BulletElectraDeluxeModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}

	{ hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 5} → f^{+}28	25 • f^{+}28 }
Royal Enfield Classic 500 Model	{ hasMake^{+} = RoyalEnfield} → f^{+}16 { hasBrakes^{+} = Combo} → f^{+}20 { hasWheelType^{+} = Wirespoke} → f^{+}24 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 5} → f^{+}28	C (RoyalEnfieldClassic500Model): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}25 • f^{+}28 }
Royal Enfield Classic 350 Model	{ hasMake^{+} = RoyalEnfield} → f^{+}16 { hasBrakes^{+} = Combo} → f^{+}20 { hasWheelType^{+} = Wirespoke} → f^{+}24 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 5} → f^{+}28	C (RoyalEnfieldClassic350Model): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}25 • f^{+}28 }
Thunderbird Twinspark Model	{ hasMake^{+} = RoyalEnfield} → f^{+}16 { hasBrakes^{+} = Combo} → f^{+}20 { hasWheelType^{+} = Wirespoke} → f^{+}24 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 5} → f^{+}28	C (ThunderbirdTwinsparkModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}25 • f^{+}28 }
R15Model	{ hasMake^{+} = Yamaha} → f^{+}17 { hasBrakes^{+} = DiskBrakes} → f^{+}21 { hasWheelType^{+} = Alloy} → f^{+}23 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 6} → f^{+}27	C (R15Model): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}17 • f^{+}21 • f^{+}23 • f^{+}25 • f^{+}27 }
FZModel	{ hasMake^{+} = Yamaha} → f^{+}17 { hasBrakes^{+} = Combo} → f^{+}20 { hasWheelType^{+} = Alloy} → f^{+}23 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 5} → f^{+}28	C (FZModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}17 • f^{+}20 • f^{+}23 • f^{+}25 • f^{+}28 }
VictorModel	{ hasMake^{+} = TVS} → f^{+}18 { hasBrakes^{+} = DrumBrakes} → f^{+}22 { hasWheelType^{+} = Wirespoke} → f^{+}24 { hasIgnition^{+} = Kick} → f^{+}26 { hasGears^{+} = 4} → f^{+}29	C (VictorModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}18 • f^{+}22 • f^{+}24 • f^{+}26 • f^{+}29 }
CBRModel	{ hasMake^{+} = Honda} → f^{+}19 { hasBrakes^{+} = DiskBrakes} → f^{+}21 { hasWheelType^{+} = Alloy} → f^{+}23 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 6} → f^{+}27	C (CBRModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}19 • f^{+}21 • f^{+}23 • f^{+}25 • f^{+}27 }
ShineModel	{ hasMake^{+} = Honda} → f^{+}19 { hasBrakes^{+} = DrumBrakes} → f^{+}22 { hasWheelType^{+} = Alloy} → f^{+}23 { hasIgnition^{+} = Self} → f^{+}25 { hasGears^{+} = 4} → f^{+}29	C (ShineModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}19 • f^{+}22 • f^{+}23 • f^{+}25 • f^{+}29 }
UnicornModel	{ hasMake^{+} = Honda} → f^{+}19 { hasBrakes^{+} = Combo} → f^{+}20 { hasWheelType^{+} = Alloy} → f^{+}23 { hasIgnition^{+} = Self} → f^{+}25	C (UnicornModel): { f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}19 • f^{+}20 • f^{+}23 • f^{+}

	{ $hasGears^{+} = 5$} → $f^{+}28$	25 • $f^{+}28$ }

Table29: Final Location map

CONCEPT ADDRESS	CONCEPT FEATURE
Thing (0, 1)	X
Bikes (1, 1)	$f^{+}1$ • $f^{+}2$ • $f^{+}3$ • $f^{+}4$ • $f^{+}5$ • $f^{+}6$ • $f^{+}7$ • $f^{+}8$ • $f^{+}9$ • $f^{+}10$ • $f^{+}11$ • $f^{+}12$
Make (1, 2)	$f^{+}2$
EngineCapacity (1, 3)	$f^{+}3$
Power (1, 4)	$f^{+}4$
Price (1, 5)	$f^{+}5$
FuelTankCapacity (1, 6)	$f^{+}6$
Mileage (1, 7)	$f^{+}7$
Brakes (1, 8)	$f^{+}8$
Weight (1, 9)	$f^{+}9$
WheelType (1, 10)	$f^{+}10$
Ignition (1,11)	$f^{+}11$
Gears (1 ,12)	$f^{+}12$
NamedBikes (2, 1)	$f^{+}1$ • $f^{+}2$ • $f^{+}3$ • $f^{+}4$ • $f^{+}5$ • $f^{+}6$ • $f^{+}7$ • $f^{+}8$ • $f^{+}9$ • $f^{+}10$ • $f^{+}11$ • $f^{+}12$
HeroHonda (2, 2)	$f^{+}2$ • $f^{+}13$
Hero (2, 3)	$f^{+}2$ • $f^{+}14$
Bajaj (2, 4)	$f^{+}2$ • $f^{+}15$
RoyalEnfield (2, 5)	$f^{+}2$ • $f^{+}16$
Yamaha (2, 6)	$f^{+}2$ • $f^{+}17$
TVS (2, 7)	$f^{+}2$ • $f^{+}18$
Honda (2, 8)	$f^{+}2$ • $f^{+}19$
HeroHondaBikes (3, 1)	$f^{+}2$ • $f^{+}3$ • $f^{+}4$ • $f^{+}5$ • $f^{+}6$ • $f^{+}7$ • $f^{+}8$ • $f^{+}9$ • $f^{+}10$ • $f^{+}11$ • $f^{+}12$ • $f^{+}13$
HeroBikes (3, 2)	$f^{+}2$ • $f^{+}3$ • $f^{+}4$ • $f^{+}5$ • $f^{+}6$ • $f^{+}7$ • $f^{+}8$ • $f^{+}9$ • $f^{+}10$ • $f^{+}11$ • $f^{+}12$ • $f^{+}14$
BajajBikes (3, 3)	$f^{+}2$ • $f^{+}3$ • $f^{+}4$ • $f^{+}5$ • $f^{+}6$ • $f^{+}7$ • $f^{+}8$ • $f^{+}9$ • $f^{+}10$ • $f^{+}11$ • $f^{+}12$ • $f^{+}15$
RoyalEnfieldBikes (3, 4)	$f^{+}2$ • $f^{+}3$ • $f^{+}4$ • $f^{+}5$ • $f^{+}6$ • $f^{+}7$ • $f^{+}8$ • $f^{+}9$ • $f^{+}10$ • $f^{+}11$ • $f^{+}12$ • $f^{+}16$
YamahaBikes (3, 5)	$f^{+}2$ • $f^{+}3$ • $f^{+}4$ • $f^{+}5$ • $f^{+}6$ • $f^{+}7$ • $f^{+}8$ • $f^{+}9$ • $f^{+}10$ • $f^{+}11$ • $f^{+}12$ • $f^{+}17$
TVSBikes (3, 6)	$f^{+}2$ • $f^{+}3$ • $f^{+}4$ • $f^{+}5$ • $f^{+}6$ • $f^{+}7$ • $f^{+}8$ • $f^{+}9$ • $f^{+}10$ • $f^{+}11$ • $f^{+}12$ • $f^{+}18$
HondaBikes (3, 7)	$f^{+}2$ • $f^{+}3$ • $f^{+}4$ • $f^{+}5$ • $f^{+}6$ • $f^{+}7$ • $f^{+}8$ • $f^{+}9$ • $f^{+}10$ • $f^{+}11$ • $f^{+}12$ • $f^{+}19$
Combo (2, 9)	$f^{+}8$ • $f^{+}20$
DiskBrakes (2, 10)	$f^{+}8$ • $f^{+}21$
DrumBrakes (2, 11)	$f^{+}8$ • $f^{+}22$
Alloy (2, 12)	$f^{+}10$ • $f^{+}23$
WireSpoke (2, 13)	$f^{+}10$ • $f^{+}24$
Self (2, 14)	$f^{+}11$ • $f^{+}25$
Kick (2, 15)	$f^{+}11$ • $f^{+}26$
6 (2, 16)	$f^{+}12$ • $f^{+}27$
5 (2, 17)	$f^{+}12$ • $f^{+}28$
4 (2, 18)	$f^{+}12$ • $f^{+}29$
Karizma(Normal)Model (4, 1)	$f^{+}2$ • $f^{+}3$ • $f^{+}4$ • $f^{+}5$ • $f^{+}6$ • $f^{+}7$ • $f^{+}8$ • $f^{+}9$ • $f^{+}10$ • $f^{+}11$ • $f^{+}12$ • $f^{+}13$ • $f^{+}20$ • $f^{+}23$ • $f^{+}25$ • $f^{+}28$
Karizma(ZMR)Model	$f^{+}2$ • $f^{+}3$ • $f^{+}4$ • $f^{+}5$ • $f^{+}6$ • $f^{+}7$ • $f^{+}8$ • $f^{+}9$ • $f^{+}10$ • $f^{+}11$ • $f^{+}12$ • $f^{+}13$

(4, 2)	• f^+21 • f^+23 • f^+25 • f^+28
Splendor(Plus)Model (4, 3)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+22 • f^+24 • f^+26 • f^+29
Splendor(NXG)Model (4, 4)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+23 • f^+23 • f^+26 • f^+29
Splendor(Super)Model (4, 5)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+22 • f^+23 • f^+25 • f^+29
Splendor(Pro)Model (4, 6)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+22 • f^+23 • f^+25 • f^+29
PassionProModel (4, 7)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+20 • f^+23 • f^+25 • f^+29
CD-DawnModel (4, 8)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+22 • f^+24 • f^+26 • f^+29
CD-DeluxeModel (4, 9)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+22 • f^+23 • f^+26 • f^+29
Glamour(Normal)Model (4, 10)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+20 • f^+23 • f^+25 • f^+29
Glamour(PGMFi)Model (4, 11)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+20 • f^+23 • f^+25 • f^+29
AchieverModel (4, 12)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+20 • f^+23 • f^+25 • f^+28
CBZXtremeModel (4, 13)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+20 • f^+23 • f^+25 • f^+28
HunkModel (4, 14)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+13 • f^+21 • f^+23 • f^+25 • f^+28
ImpulseModel (4, 15)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+14 • f^+20 • f^+23 • f^+25 • f^+28
CT100Model (4, 16)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+15 • f^+22 • f^+24 • f^+26 • f^+29
Pulsar135LSModel (4, 17)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+15 • f^+20 • f^+23 • f^+25 • f^+28
Pulsar150DTS-iModel (4, 18)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+15 • f^+20 • f^+23 • f^+25 • f^+28
Pulsar180DTS-iModel (4, 19)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+15 • f^+20 • f^+23 • f^+25 • f^+28
Pulsar220DTS-iModel (4, 20)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+15 • f^+21 • f^+23 • f^+25 • f^+28
Avenger220DTS-iModel (4, 21)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+15 • f^+20 • f^+23 • f^+25 • f^+28
Discover135Model (4, 22)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+15 • f^+20 • f^+23 • f^+25 • f^+29
Discover125Model (4, 23)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+15 • f^+22 • f^+23 • f^+25 • f^+28
Discover100Model (4, 24)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+15 • f^+22 • f^+23 • f^+25 • f^+29
Platina100Model (4, 25)	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+15 • f^+22 • f^+23 • f^+26 • f^+29
Duke200Model	f^+2 • f^+3 • f^+4 • f^+5 • f^+6 • f^+7 • f^+8 • f^+9 • f^+10 • f^+11 • f^+12 • f^+

(4, 26)	15 • f^{+}21 • f^{+}23 • f^{+}25 • f^{+}27
BulletElectraTwinspark Model (4, 27)	f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}25 • f^{+}28
Bullet 350 Twinspark Model (4, 28)	f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}25 • f^{+}28
Bullet Electra EFI Model (4, 29)	f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}25 • f^{+}28
Bullet Electra Deluxe Model (4, 30)	f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}25 • f^{+}28
Royal Enfield Classic 500 Model (4, 31)	f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}25 • f^{+}28
Royal Enfield Classic 350 Model (4, 32)	f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}25 • f^{+}28
Thunderbird Twinspark Model (4, 33)	f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}16 • f^{+}20 • f^{+}24 • f^{+}25 • f^{+}28
R15Model (4, 34)	f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}17 • f^{+}21 • f^{+}23 • f^{+}25 • f^{+}27
FZModel (4, 35)	f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}17 • f^{+}20 • f^{+}23 • f^{+}25 • f^{+}28
VictorModel (4, 36)	f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}18 • f^{+}22 • f^{+}24 • f^{+}26 • f^{+}29
CBRModel (4, 37)	f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}19 • f^{+}21 • f^{+}23 • f^{+}25 • f^{+}27
ShineModel (4, 38)	f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}19 • f^{+}22 • f^{+}23 • f^{+}25 • f^{+}29
UnicornModel (4, 39)	f^{+}2 • f^{+}3 • f^{+}4 • f^{+}5 • f^{+}6 • f^{+}7 • f^{+}8 • f^{+}9 • f^{+}10 • f^{+}11 • f^{+}12 • f^{+}19 • f^{+}20 • f^{+}23 • f^{+}25 • f^{+}28