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AREA OF EXPERTISE:	Feature Location and Model-Based Software Product Lines
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SUMMARY:

As part of this thesis we have created two approaches (FLiMEA and VMM) that will help out companies that create products driven by software, to shift their way of working to a more systematic approach. Our approaches will enable to identify and extract the units of functionality (features), present in their models into reusable and isolated assets. This shift in the paradigm (to a Software Product Line) will enable the companies to create the software for their products more efficiently and in less time.

Most Software Product Lines are built from a set of existing products, that is re-engineered into reusable assets following feature location approaches. Traditional feature location approaches target program code, neglecting other software artifacts as models.

We present FLiMEA, an approach for Feature Location in Models driven by an Evolutionary Algorithm. FLiMEA capitalizes on experts domain knowledge to boost the feature location process and produces model fragments that properly capture the reusable units of the domain. FLiMEA performs a search (guided by a fitness function) over alternative feature realizations (generated through genetic operations).

Features and their realizations must evolve over time. We propose Variable MetaModel (VMM), an approach based on variability modeling ideas applied at metamodel level to enable the co-evolution of the model fragments and the language used to create them.

FLiMEA and VMM have been evaluated in our industrial partners, BSH and CAF. We explore different genetic operations and fitness functions so FLiMEA can be tailored to work under different industrial scenarios and we check that VMM is able to cope with the evolution of the features.