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Dynamic Field Theory and object recognition for an autonomous robot

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**ABSTRACT OF THE TALK**

I will give a short tutorial on the basic concepts of Dynamic Field Theory like stability, competition, working memory and long term memory. To illustrate the applicability of these concepts on technical systems, I will then present two object recognition systems for an autonomous robot. The first is based on feature label fields and does online learning of object representations based on low dimensional features. Objects are represented by low dimensional features embedded in feature label fields. The binding of object features is realized through excitatory interaction between the different feature dimensions and objects are stored in long term memory by leaving memory traces in the feature label fields.

The second system does the object recognition and pose estimation in a coupled loop. Feature invariance is achieved through the active estimate of an object centered reference frame. Shift and rotation estimates are represented through dynamic neural fields, the labels are similarly represented through a dynamic architecture.