c, Non-Local Role Bindings and Inferencing in a Localist Network for Natural Language Un

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Abstract: This paper introduces a means to handle the critical problem of non(cid:173) local role-bindings in localist spreading-activation networks. Every conceptual node in the network broadcasts a stable, uniquely-identifying activation pattern, called its signature. A dynamic role-binding is cre(cid:173) ated when a role's binding node has an activation that matches the bound concept's signature. Most importantly, signatures are propagated across long paths of nodes to handle the non-local role-bindings neces(cid:173) sary for inferencing. Our localist network model, ROBIN (ROle Binding and Inferencing Network), uses signature activations to ro(cid:173) bustly represent schemata role-bindings and thus perfonn the inferenc(cid:173) ing, plan/goal analysis, schema instantiation, word-sense disambigua(cid:173) tion, and dynamic re-interpretation portions of the natural language un(cid:173) derstanding process.