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**Modeling pigeon behaviour using a Conditional Restricted Boltzmann Machine**

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In an effort to better understand the complex courtship behaviour of pigeons, we have built a model learned from motion capture data. We employ a Conditional Restricted Boltzmann Machine (CRBM) with binary latent features and real-valued visible units. The units are conditioned on information from previous time steps to capture dynamics. We validate a trained model by quantifying the characteristic “headbobbing” present in pigeons. We also show how to predict missing data by marginalizing out the hidden variables and minimizing free energy.