Random forests

a workhorse for many computer vision tasks

Head pose estimation

Human Pose Recognition

Semantic labelling

Object detection
... but they lack a representation learning mechanism

Split decisions use pre-defined feature representations
Deep networks provide a natural mechanism to develop new feature representations.
Deep Neural Decision Forests

Decision forest with split functions governed by a deep neural network
Deep Neural Decision Forests

End-to-end trainable
Deep Neural Decision Forests

Split functions learnt by back-propagation through trees and deep network
Deep Neural Decision Forests

Learning of leaf predictions by convex optimization
Deep Neural Decision Forests

For more details please attend our talk and visit our poster