DSSI and CyberSecurity

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Nanomaterial Synthesis

• Motivation
  • Materials discovery requires significant time. Maybe AI can help?

• Problem
  • Classify morphologies and compositions of a material based on chemicals used.

• Approach
  • Graphical Embeddings (Node2Vec)
  • Sentence Classification (FastText)
Brain Recognition

• Motivation
  • Are we able to use data from the brain like a fingerprint?
  • Possible applications to brain degenerative disorders.

• Problem
  • Given two fMRI sequences, did they come from the same person?

• Approach
  • Deep Learning (One-Shot Learning)
Network Cyber Attack Classification

• Motivation
  • There are a variety of cyber attacks that can be done via network communication. (DNS Tunneling)

• Problem
  • Classify network traffic on whether a cyber attack has occurred.

• Approach
  • DNS Tunnel into my own laptop. (Iodine)
  • Collect the network data.
  • Random Forest Classifier
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