Pratik Mangalore
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Education

- **University Of California, Los Angeles** — Los Angeles, CA
  Master of Science in Computer Science; GPA: (4.0/4.0) — *June 2020 (Expected)*
- **Indian Institute Of Information Technology, Allahabad** — Allahabad, India
  Bachelor of Technology in Information Technology; GPA: (3.9/4.0) — *July. 2014 – July. 2018*

Experience

- **University Of California, Los Angeles** — Los Angeles, CA
  Graduate Student Researcher - Dept. of Psychiatry and Behavioral Sciences — *Dec. 2018 - Present*
  - **Data Integration & Spectral Clustering using Similarity Network Fusion**:
    - Implemented the Similarity Network Fusion, a belief propagation algorithm, to integrate complementary information from different data modalities such as fMRI, genetic and behavioral data.
    - Performed spectral clustering on the fused network to obtain patient subgroups based on symptoms, genes, etc.
- **Cisco** — Bangalore, India
  Software Engineering Intern - Mobility Core Business Unit — *Jan. 2018 - June. 2018*
  - **Application Detection & Control**:
    - Instrumental in developing a low latency N-Gram and Decision tree based heuristic machine learning algorithm to classify network traffic based on TCP payload data. The module was able to classify 97% of the traffic correctly.
    - Integrated the above model with the Core ADC module.
    - Collected and analyzed payload data to detect anomalies.
    - Optimized memory usage for branches related to Machine Learning within the ADC module.
  - **Cisco StarOS Auto-Documenter Module**:
    - Developed an independent module which can auto-document the logic for an application's protocol detection code using regular expressions and integrated with the Cisco proprietary OS.

Research & Projects

- **Using HMM & Complex Network Measures to compute functional and causal connectivity in the brain**:
  - Mapped brain response activity for verbal and mathematical tasks to a connectome using Hidden Markov Models.
  - Applied Complex Network measures to differentiate the activity caused in response to verbal and mathematical tasks
- **Developed a language invariant OCR using Unsupervised Machine Learning**:
  - Classified handwritten letters by converting input into a set of strokes which were learned using the Expectation Maximization algorithm and Probabilistic Latent Semantic Indexing.
- **Augmenting Statistical Machine Translation using POS Tagging and data mining**:
  - Developed a modified Apriori Algorithm to obtain semantic rules based on POS (Parts-Of-Speech) Tagging. The POS tagging aids in performing machine translation when sarcasm is detected.
- **Developed a Probabilistic Database enhanced with Open World Semantics**:
  - Implemented the Lifted Inference Algorithm to return the probability of a query being true.
  - Enhanced the normal Lifted Inference Algorithm with open world semantics, hence allowing one to query items not strictly present within the probabilistic databases fed as input to the algorithm.
- **Dynamic Screen Clipper - (Self Project)**:
  - Developed this application for the Windows OS, that can crop selected regions from an application and sticky it onto the screen. National Award Winner in Hack In The North '17 (India's largest student organized Hackathon
  - The stickied window retains full functionality of the application.

Programming Skills

- **Languages**: Python, R, C++, C, Java, C#,HTML,CSS **Tools:** MATLAB, Microsoft Visual Studio, NetBeans, Git
- **Data Science and ML Libraries**: NumPy, Scikit-Learn, Tensorflow, Keras
- **Relevant Coursework**: Data Structures & Algorithms, Probabilistic Programming and Relational Learning, Natural Language Processing, Operating Systems, Machine Learning, ML in Bioinformatics, Compiler Design

Honors, Awards & Membership

- **Received the IEEE Computer Society Richard E. Merwin Scholarship**: 2017
- **National Award Winner - Hack In The North**: 2017