Rukmal Weerawarana

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CAREER OBJECTIVE

I am a recent MS graduate seeking a Data Science role in the Technology Sector, where I can apply my STEM-related applied research experience to support the growth and value addition process of your firm.

EDUCATION

Master of Science (Financial Engineering)   **May '19**
Stevens Institute of Technology — Hoboken, NJ
School of Business (Division of Financial Engineering)
GPA (4.0 Scale): 3.8 | *Awards:* Provost's Master's Fellowship

Bachelor of Arts in Business Administration (Finance)   **Jun '17**
University of Washington — Seattle, WA
Michael G. Foster School of Business (Department of Finance and Business Economics)

Certificate in Quantitative Fundamentals of Computational Finance   **Aug '16**
University of Washington — Seattle, WA
College of Arts and Sciences (Department of Applied Mathematics)

WORK EXPERIENCE

Research Assistant   **Hoboken, NJ**
Sensorimotor Control Laboratory   Aug '18 - May '19
Department of Biomedical Engineering; Stevens Institute of Technology
Stevens Institute for Artificial Intelligence; Stevens Institute of Technology

- Designed and implemented algorithms to assess and classify tremor severity in patients with late-stage Parkinson's Disease.
- Created a highly scalable and extensible web application for sensor data analysis, incorporating HIPAA-compliant data storage and access, as well as efficient cluster management with Docker and Kubernetes.

Summer Research Fellow   **Troy, NY**
RPI-IBM HEALS Research Center   May '18 - Aug '18
Tetherless World Constellation; Rensselaer Polytechnic Institute
AI Horizons Network; IBM Research

- Led the design and development of the PaperRank Framework, a methodology for deriving probabilistic community trust in academic publications. A proof-of-concept was implemented, from extraction to final trust score computation with a complete ETL pipeline, ingesting and analyzing over 14 Million articles from the NCBI PubMed Database.
- Formulated and implemented novel strategies for semantically-enhanced automated natural language extraction of medical directives from Clinical Practice Guidelines (CPGs), for eventual inclusion in a knowledge graph of Diabetes treatment directives.
- Explored the field of 'Semantalytics', which lies at the intersection of Semantics and Analytics. Drafted a Vision statement for the future exploration of this novel field of research, through the lens of bioinformatics.

Laboratory Assistant   **Hoboken, NJ**
Hanlon Financial Systems Laboratory   Sep '17 - Dec '18
School of Business; Stevens Institute of Technology
Stevens Institute for Artificial Intelligence; Stevens Institute of Technology

- Assisted in the daily operations of the lab, including assisting instructors and students (Graduate and Undergraduate), and maintaining hardware and software resources.

Business Management Team Lead   **Seattle, WA**
UW Hyperloop   May '16 - Aug '17
College of Engineering; University of Washington
Other Titles: Impact Development Team Lead, Control Systems Team Member

- Represented the University of Washington at the inaugural SpaceX Hyperloop Pod Competition in Hawthorne, CA. We placed 4th in the United States, and 6th globally.
- Led the Business Management Team to launch a highly successful crowdfunding campaign, raising over $20,000 in cash (with an initial goal of $10,000), and over $80,000 of source materials used in the construction of the Pod. The collective effort of the team led us to have the lowest-cost Pod among the 30 final teams.
- Spearheaded the sourcing and delivery of over $50,000 of raw material, including high-density Carbon Fiber, release agents, and powerful Neodymium magnets for the final Pod assembly.

Skills and Technologies

Programming and Scripting Languages
Python, R, Java, JavaScript, MATLAB, Go, SQL, SPARQL, LaTeX, Perl

Databases
MySQL, Redis, Blazegraph, Neo4j, Apache Jena, MongoDB

Deployment, Orchestration, and Continuous Integration Tools
Amazon Web Services, Docker, Kubernetes, GNU Make, Travis CI, Google Cloud Platform, Microsoft Azure, Heroku

Frameworks and Libraries
scikit-learn, SciPy, Node.js, Flask, R Shiny, Spring, TensorFlow, NLTK, Go Revel, RDFLib, Socket.IO, Electron

Operating Systems
Linux (Ubuntu, Fedora, etc.), Windows, macOS

Reproducible Research Tools
GitHub, Google Colaboratory, Knitr, Microsoft Azure Notebooks, Overleaf, Project Jupyter, Read the Docs

Soft Skills
Conflict Resolution, Excellent Communication Skills, Excellent Writing Skills, Extensive Leadership Experience, Project Management, Public Speaking

Selected Projects

Precis (Jinja, LaTeX, Python, SPARQL) | `https://precis.rukmal.me`   **2019**
Precis is an Ontology for modeling personal professional metadata. The extended Precis toolkit also includes a Pythonic search API for the Ontology, a JSON data loader, and an extensible templating engine.

fe621 (LaTeX, Python, scikit-learn) | `https://git.rukmal.me/FE-621-Homework`   **2019**
fe621 is a Python library that provides functionality for lattice based derivative pricing models, exotic option picing, Monte Carlo simulations, numerical differentiation and integration, and optimization.

reIndexer (Docker, Python, SciPy) | `https://git.rukmal.me/reIndexer`   **2019**
reIndexer is a research tool for the backtest-driven evaluation of different sectorization heuristics, using a system of synthetic ETFs, and efficient portfolios of those synthetic ETFs.

PaperRank Framework (Kubernetes, Python, Redis, SciPy, scikit-learn) | `https://git.rukmal.me/PaperRank`   **2018**
The PaperRank framework is designed to enable bibliometrics and citation analysis of academic literature graphs. It is highly extensible, and designed to be corpus-agnostic; currently, it is configured for use with the NCBI PubMed database.

Knowledge Areas

Artificial Intelligence and Data Science
Anomaly Detection, Cluster Analysis, Data Visualization, Dimensionality Reduction, Graph Analytics, Knowledge Representation, Natural Language Processing, Predictive Modeling, Semantic Analysis, Statistical Classification, Time Series Analysis, Unsupervised Learning

Economics and Econometrics
Computational Econometrics, Credit Risk Modeling, Macroeconomics, Managerial Economics, Microeconomics, Yield Curve Modeling

Finance
Asset-Backed Securities, Banking and Financial Systems, Capital Budgeting, Exotic Derivative Pricing, Fixed Income, Foreign Exchange Risk, International Finance, Market Microstructure, Modern Portfolio Theory, Risk Analytics

Selected Publications

Learned Sectors: A fundamentals-driven sector reclassification project   **2019**
Rukmal Weerawarana, Yiyi Zhu, Yuzhen He
arXiv preprint; arXiv:1906.03935
This publication explores the notion of recalibrating traditional market sectors (i.e. Technology, Financials, etc.) using an unsupervised hierarchical clustering heuristic derived from corporations' fundamentals data. I developed infrastructure to handle data ETL processes, and developed the backtesting framework used to select the optimal sector classification heuristic.

(Draft) **Inferring Community Trust from Citation Graphs**   **2019**
James P. McCusker, Rukmal Weerawarana, Alexander New, Kristin P. Bennett, Deborah L. McGuinness
PaperRank explores novel methodologies of underwriting provenance-enabled knowledge graphs with a probabilistic confidence layer. I designed and developed the scalable ETL ingestion pipeline (handling over 15,000,000 unique records), data analysis layer, internal graph construction layer, and a Gamma Mixture Model solver to derive the final trust score.