Worasom Kundhikanjana, Ph.D.
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Summary

- Broad range of technical expertise in data science and material science. Uses machine learning (ML) in data inference, pattern identification, data driven decision-making and ML model deployment.
- Detail-oriented, able to independently design and rapid-prototype experiments in a start-up environment. Quick to embrace new technology.
- Six years experience leading a research group, organizing and planning research budgets
- Able to communicate effectively. Authored and co-authored 19 peer reviewed research articles

Education

Stanford University, CA: PhD/MS in Applied Physics, GPA 3.86/4.00 (2006 – 2013)
Brown University, RI: BS in Physics, *Magna Cum Laude*, GPA 4.00/4.00 (2002 – 2006)

Experience

Data Scientist (2018 – current), Python-based machine learning projects
- **Analysis of Air Pollution Data:** Enabled effective environmental policy change by identifying main sources of air pollution. Scraped weather and Bangkok air pollution data, created an SQL database, visualized and feature engineered input data, identified extremely randomized tree regressor as optimal ML prediction model, and isolated main pollutant sources using feature of importance.
- **Predicting US Monthly Electricity Consumption**: Used economic and weather data to predict monthly electricity consumption by state, with more granularity than the US Energy Information Administration short-term energy outlook estimates. Deployed time-series prediction as a web application with Heroku.
- **Health data**: Automated identification of liver patients using blood test data. Feature selection from feature of importance. Achieved 78% accuracy on the validation set (baseline = 72%)
- **A/B Testing**: Analyzed data from the popular mobile game, Cookie Cats. Used bootstrap analysis to compare effectiveness of time pause at level 30 and 40 toward user retention.
- **Image classification:** Identified oil palm plantations from satellite images with 0.997 score (leaderboard 0.999). Used convolution neural network (fast.ai). Tackled imbalance dataset using image augmentation.

Principal Investigator and Professor Lecturer, School of Physics, Suranaree University of Technology (Jan 2013 – Jan 2019)
- **Leadership**: Managed grants and funding for multiple projects; supervised multiple graduate students.
- **Research:** Investigated the properties of novel materials for memory device applications. Collaborated with Western Digital (Thailand), to solve corrosion problems in the production line. Used image analysis, data analysis, and data visualization techniques (python and MATLAB) to provide insight.
- **Quality Assurance**: Wrote QA status, statistics and performance reports for graduate physics curriculum. Designed surveys and provided insights to key stakeholders.
- **Teaching/Communication**: 6 years teaching experience in undergraduate/graduate physics classes. Designed and taught project-based classes incorporating design thinking and rapid prototyping concepts.

Research Assistant, Professor Zhi-Xun Shen Lab, Stanford University (Sep 2006- Jan 2013)
- **Start-up experience**: Developed novel microscopy technique for nanoscale imaging. Designed automatic hardware control and data acquisition programs in LabVIEW. Invention commercialized as lab spin-off company (PrimeNano Inc).
- **Image Analysis:** Processed and analyzed MIM images to segment and calculate correlation length of repeated patterns in images. Performed edge detection and cross-correlation.

Programing/Technical Skills

- **Python (**Machine Learning, Neural Networks, Time Series Modeling, Data Analysis, NLP, Visualization, Feature Engineering, Web Scraping, Image processing, Image segmentation, Geospatial Data Analysis), **Database** (SQLite, Postgres, MongoDB), **Cloud Application** (Heroku), **Distributed Computing** (Spark), **Git**, **Linux** (Bash)
- **Commercial Software:** MATLAB, LabVIEW, COMSOL