Suman K. Gunnala

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TECHNICAL SKILLS

Data: Relational/non-relational databases, Hadoop, Apache Spark, High Performance Computing Systems, Unix, Logstash

Programming: C, Python [pandas, numpy, scipy, scikit-learn, matplotlib], SQL, MATLAB, TensorFlow/Keras, Shell Scripting, Data Visualization [d3.js, Tableau]

Analytics: Machine/Deep Learning: Feature engineering, Time Series Forecasting, CNNs/RNNs, NLP, Electromagnetics and Wireless Communication Standards, Statistical Analysis, Experimental Set Up, Hands-on Radio Frequency Experiments, Scientific Presentations, Communicating Scientific Results

EDUCATION

Masters in Data Science and Engineering	University of California, San Diego - Sep 2016 – Jun 2018
Doctoral Candidate, Electrical Engineering	University of Texas, Arlington - Aug 2006 – Aug 2010
Masters in Electrical Engineering	University of Texas, Arlington - Aug 2004 – Aug 2006

PROJECTS

Lung Nodule Classification and Localization with 2D/3D CNNs - masters thesis

- Designed end-to-end CNN pipeline with AWS, HDF5 and Keras/TensorFlow using the LUNA16 dataset
- Built a classification ResNet model and currently working on a localization, segmentation tasks using U-NET
- Validation through ROC curves shows model performs better than commercial CAD systems

Predicting Amazon Review Helpfulness Ratio

- Feature engineering using transformation and NLP techniques
- Implemented ensemble algorithms: XGBoost and random forest models to predict Amazon product review helpfulness
- Achieved a MAE of 0.176 compared to a baseline model score of 0.261

Super Resolution Radar Imaging Based on Compressive Sampling - doctoral thesis

- Compressive sampling based radar imaging approach to model targets as energy content of scattering centers
- Super-resolution radar images to detect objects above rough surfaces emulating objects on a ocean surface

Mitigation of Window Effects in Radar Imagery Using Wavelets - masters thesis

- Proposed a physics based approach using wavelets for clutter suppression and mitigating window effects

Other academia and self motivated projects

- Image segmentation and classification using Tensorflow, Time series forecasting using LSTMs, Image and Video captioning using CNNs and RNNs, NLP of news data, Super-resolution imaging using Auto encoders

RECENT EXPERIENCE

Data Scientist/Software Applications Engineer   **Qualcomm - March 2012 – Present**

- Engineer Machine learning model for predicting HPC cluster environment utilization
- Pattern analysis for 5 years HPC computing environment data with Hadoop environment
- Time-series forecasting for resource need demand forecasting

- Commercialization of embedded software and systems development of wireless standards
- Proficient in end to end protocol of wireless standards such as WCDMA, and LTE
- Commercialization lead for China OEM to launch in North American carrier

RF Engineer   **Ericsson - Sep 2010 – March 2012**
- RF optimization engineer for live cellular networks based on fields measurements and RF planning tools
- Proposed optimization strategies through field trails and debugging call flows to improve network performance

Adjunct Faculty/Graduate Researcher   **University of Texas, Arlington - Aug 2006 – Aug 2010**
- Instructor for Electromagnetics II
- Researcher in wave scattering research center focused on Antenna design, radar imaging and signal processing, Compressive sampling based radar imaging, and RF measurements

FIRST AUTHOR PUBLICATIONS

[1] S. K. Gunnala *et al.*, "Wideband Cavity-Backed Slot Antenna for Ground Penetrating Free of Direct Ground Bounce", Electromagnetics Journal, Vol. 31, Iss. 3, pp: 192 - 214, 2011.

[2] S. K. Gunnala, *et al.,* "An Ultra-Wideband Cavity Backed Slot Antenna Matched to Various Ground Media," IEEE APS and URSI Conference, 2011.

[3] S. K. Gunnala, and S. Tjuatja "Target detection above rough surfaces in microwave imaging using compressive sampling," pp.3498 - 3501, IGARSS, July 2010.

[4] S. K. Gunnala, and S. Tjuatja "Superresolution ISAR imaging using Compressive Sampling," Proc. SPIE, Vol. 7699-8, Orlando, April 2010.

[5] S. K. Gunnala, *et al.*, "Localization of scattering centers in radar imaging based on sparsity constraints," Proc. SPIE, Vol. 7337, 73370J (2009); DOI:10.1117/12.818952

[6] S. K. Gunnala, *et al.*, "Radar Target Modeling Based on Energy Content of Scattering Centers," presented at PIERS 2009 Beijing proceedings, china.

[7] S. K. Gunnala, *et al.*, "Subsurface sensing of near surface object using cavity backed slot (CBS) antenna," Proceedings of IEEE Geoscience and Remote Sensing International Symposium, vol. 2, pp. II-189- II-192, July 2008.

[8] S. K. Gunnala, *et al.*, "A novel wide band slot antenna for ground penetrating radar," presented at IEEE APS International Symposium, San Diego, July 2008.

[9] S. K. Gunnala, *et al.*, "A Broadband Proximity Antenna for Subsurface Sensing," presented at PIERS 2008 proceedings at Hangzhou, china.

RELEVANT COURSEWORK

Python for Data Analysis • Database Management Systems • Probability & Statistics using Python • Data Analysis using Spark • Machine Learning and Deep learning • Beyond Relational Data Models • Data Visualization • Data Integration and ETL • Computational Methods in Electromagnetics • Digital Signal Processing • Random Signals and Noise • Statistical Signal Processing • Wavelets and Filter Banks • Propagation Modeling • Neural Networks • Wireless Communications • Digital Communications • Antenna system theory