MUKESH MITHRAKUMAR

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EDUCATION

B.S. IN PHYSICS; Emphasis Electrical Engineering | SOUTH DAKOTA STATE UNIVERSITY

Main Courses: Intro to Computer Vision, Intro to Embedded Systems, Linear Circuit Analysis, Digital Systems, Quantum Mechanics, Automatic Controls, Mathematical Physics, Advanced Engineering Mathematics, Linear Algebra, Scientific Computation.

CERTIFICATIONS | Deep Learning Specialization, *Andrew Ng's deeplearning.ai*. Grade: 99.7%

Machine Learning with TensorFlow on Google Cloud, *Google*. Grade: 97.5%

Data Engineering on Google Cloud Platform, *Google*. Grade: 99.6%

Machine Learning Specialization, *University of Washington*. Grade: 96.8%

Python Specialization, *University of Michigan*. Grade: 97.3%

Algorithms Specialization, *Stanford University*. Grade: 96.0%

PROFESSIONAL EXPERIENCE

DATA SCIENCE MENTOR | THINKFUL | 12.18 – CURRENT | (5 MOS)

- Mentoring aspiring data scientists participating in Thinkfuls' Data Science Program.

MACHINE LEARNING CONSULTANT | ADHIRAIYAN AI CONSULTING | 09.18 – CURRENT | (8 MOS)

- Provide AI services for early-stage startups. Have worked on numerous projects from BigGAN for the entertainment industry, an algorithm to predict vehicle speed, object detection in aerial images, predictive model for a retail company to pill detection and classification algorithm for a health care startup.

MACHINE LEARNING SOFTWARE ENGINEER | DATA SCIENCE RETREAT | 08.17 – 11.18 | (1YR 4 MOS)

- Developed an open source software package to assist radiologists in the evaluation of lesions in CT and MRI scans for multiple organs.
- Worked with a team to build an app that can diagnose malaria from a blood sample. Currently, the startup is going through crowdfunding.

ELECTRICAL DESIGN ENGINEER | BOBCAT COMPANY | 01.17 – 08.17 | (8 MOS)

- Provided engineering support including documentation, design, prototype, test, supplier interfaces and manufacturing for next generation compact loaders that led to an increase in net profit by $87 million.
- Created, managed and maintained CAD models and drawing documentations for Electrical systems.
- Provided Controller Area Networks (CAN) programming, troubleshooting and support to prototype assembly and manufacturing through root analysis.

PHYSICS TEACHING ASSISTANT | SOUTH DAKOTA STATE UNIVERSITY | 10.15 – 01.17 | (1 YR 4 MOS)

- Directed recitation sessions on concepts of Mechanics, Thermodynamics, Electricity and Magnetism in simpler terms and clarified doubts to help students grasp concepts.

UNDERGRADUATE RESEARCHER | SOUTH DAKOTA STATE UNIVERSITY | 10.15 – 01.17 | (1 YR 4 MOS)

- Synthesized a novel magnetic material, analyzed efficiency and tested electronic properties of the material that led to a Journal paper in Applied Physics.
- Fabricated a novel thin film Perovskite solar cell with 10.5% efficiency for a grant by NSF.
- Implemented a multi-layer perceptron in FPGA using Verilog.

PROJECTS

* Available in GitHub

MACHINE LEARNING ENGINEER | PERSONAL PROJECTS | 01.17 – 08.18

- Modified a RetinaNet package for Object Detection by training over 17 million images in Google Cloud. **Kaggle (Top 100 - Bronze medal) ***
- Implemented a Random Forest Classifier and Multi Output Classifier from sklearn and experimented with LSTM for Visual Relationship identification in Google Cloud. **Kaggle (Top 100 - Bronze medal) ***
- Built an ensemble convolutional neural network to identify a ship or an iceberg from a remotely sensed satellite using TensorFlow, OpenCV, SciKit and Keras for a Log Loss of 0.1574. **Kaggle (Top 16%). ***
- Applied regression and classification models (SVM, Logistic Classification, Gradient boost) to predict what projects will be funded for Kickstarter for 68% accuracy. **Hacker Earth (Top 3%) ***
- Used classification models (Decision trees) to predict whether an ad will get clicked or not for 72% accuracy. **Hacker Earth (Top 6%) ***
- Deployed a TensorFlow model in Google Cloud by acquiring raw data from BigQuery and transforming the dataset using Dataflow to predict taxi fair price for a ride in New York.
- Optimized a Logistic Regression model via Stochastic Gradient Ascent to Extract features from Amazon product review for product sentiment analysis and recommend products with 78% accuracy. *
- Created python modules and shell scripts to wrangle raw data and built pipeline to front-end dashboard using SQL to train machine learning models.
- Trained a boosted ensemble of decision-trees on Lending Club dataset to predict whether a loan will be paid off in full or the loan will be charged off for 71% accuracy. *
- Explored 4 million articles in Wikipedia dataset using the EM algorithm for a Gaussian mixture model and then compared efficiency with Latent Dirichlet allocation and Hierarchical clustering models. *
- Utilized a combination of statistics, supervised and unsupervised machine learning to predict about the future sale prices of homes. *

SKILLS

(Experience in years)

- **Programming Languages**- Python (3.5), C (0.5), MATLAB (0.5), Verilog (0.5), GPU Programming (0.5), CUDA compilers (0.5).
- **Software Libraries**- Keras (2), TensorFlow (1.5), PyTorch (0.5), Pandas (2), SciPy (1), SciKit-Learn (1), OpenCV (0.5), NumPy (2), GraphLab (0.5), Matplotlib (1), git (0.5).
- **Database Management**- SQlite (0.5), MySQL (0.5), Google Cloud SQL (0.5), Google BigQuery (0.5), MongoDB (0.5), Mongoose (0.5).
- **Web Development**- HTML (0.25), CSS (0.25), Bootstrap (0.25), JavaScript (0.25), jQuery (0.25), Node.js (0.25), Express.js (0.25).

PUBLICATIONS AND PRESENTATIONS

- **Journal Articles (Peer Reviewed)**
  1. Y. Jin, P. Kharel, P. Lukashev, S. Valloppilly, B. Staten, J. Herran, I. Tutic, **M. Mithrakumar,** B. Bhusal, A. O'Connell, K. Yang, Y. Huh, R. Skomski and D. J. Sellmyer. "Magnetism and electronic structure of CoFeCrX (X = Si, Ge) Heusler alloys". *Journal of Applied Physics 2016; (Vol.120, Issue 5).*