Arun Nemani

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US Citizen | arunnemani.com

Education

PhD | Biomedical Engineering
RPI | 2013-2017

- Research: machine learning, image processing, brain imaging, surgical skill assessment
- Advisor: Suvranu De, Xavier Intes

MS | Biomedical Engineering
RPI | 2010-2012

- Research: image processing, virtual simulators, surgical skill assessment

BS | Biomedical Engineering
University of Minnesota - TC | 2005-2009

Skills

Languages
Expert
python • SQL • matlab

Proficient
CSS • bash • C++ • HTML • R

Machine Learning
Open source frameworks
pytorch • scikit-learn • pandas
numpy • scipy • catboost • lightgbm
cuDF • cuML • shap

Algorithms
gradient boosting • SVM • clustering
regression • classification • PCA / LDA
decision trees • NLP
model selection • model validation

General
AWS S3 •AWS EC2 • postgres
elasticsearch • kibana • tableau
linux • mac • UNIX • git • docker
LaTeX• jupyter • sublime • atom
vim • flask • dash • gunicorn
matplotlib • seaborn • plot.ly
nginx • OpenCV • REST api • cron

Experience

Sr. Data Scientist | Food Genius (acquired by US Foods)
Jul 2018 - present

- Designed, built, and deployed a full-stack, machine-learning based web app that predicts supply chain service levels enterprise wide, with **36%** higher balanced accuracy than food industry standards.
- Manage the core data science team at US Foods to execute on cross-functional business initiatives across merchandising, supply chain, and marketing teams

Research Scientist | Rensselaer Polytechnic Institute
Sep 2010 - Dec 2017

- Developed and validated machine learning models (linear discriminant analysis, support vector machines, and logistic regression) using brain imaging data to assess surgical motor skill proficiency
- Validated classification models to robustly (ROC - AUC = 0.94) predict motor skill levels with a **113%** higher accuracy than current US Surgery Board Certification methods
- Led three multi-institutional NIH clinical studies with **$2M** of funding in collaboration with Massachusetts General Hospital, Harvard Medical School, Yale Medical School, and University at Buffalo

Manufacturing Engineer | St. Jude Medical (acquired by Abbott)
Jun 2009 - July 2010

- Leveraged computer vision (OpenCV) and machine learning to implement a real-time medical device part inspection system for the cardiovascular diseases division
- Used data driven and analytical methods to prove value of automated part inspection system resulting in net cost reductions of **~$200k / year**

Key Publications and Talks

Articles

- Assessing bimanual motor skills with optical neuroimaging ***Science Advances***
- Convergent validation and transfer of learning studies of a virtual reality-based pattern cutting simulator ***Surgical Endoscopy***
- Noninvasive brain imaging demonstrates that surgical skills transfer from training simulators to ex vivo models ***JACS***

Conference podium talks

- Society of American Gastrointestinal and Endoscopic Surgeons (SAGES)
- American College of Surgeons (Clinical Congress)
- Optical Society of America (OSA)

Social good and interests

Social good

- Tutored several adults ranging from jail inmates to single working moms to help them achieve their GEDs. *www.lvorc.org*
- Mentored at-risk, low-income Albany high school students to help them academically succeed and engage them in STEM programs. *www.4thfamily.org*

Interests

- I'm a huge film buff and have seen almost every major TV series on HBO. Want to kill a few hours? Ask me about the Sopranos, The Wire, or GoT
- I'm also a training pilot and love flying around Chicagoland