



Education

PhD | Biomedical Engineering RPI | 2013-2017

- Research: machine learning, image processing, brain imaging, surgical skill assessment
- Advisor: Suvrana 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

Experienced

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 web app that predicts supply chain service levels with **86%** balanced accuracy on an enterprise level
- developed a customer churn model that effectively determines the lifetime value for any US Foods customer
- mentored and guided three junior data scientists as direct reports

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* 📄
- Noninvasive brain imaging demonstrates that surgical skills transfer from training simulators to ex vivo models *JACS* 📄
- Convergent validation and transfer of learning studies of a virtual reality-based pattern cutting simulator *Surgical Endoscopy* 📄

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
- Mentored at-risk, low-income Albany high school students in physics, chemistry, and math to help them academically succeed and engage them in STEM programs

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

