CHARLES DE LAS CASAS

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TECHNICAL STRENGTHS

- Numerical analysis, mathematical modeling, linear algebra, differential equations
- Programming languages: Python (NumPy, Sklearn, SciPy, Pandas), Matlab, C, R, SQL, Hadoop MapReduce, Git
- Machine Learning: Linear/Logistic Regression, Random Forests, K-Means, Gradient Boosted Trees, Time Series

EDUCATION

The University of Chicago, Chicago, IL — 2013-April 2018
Ph.D. in Molecular Engineering

UC Santa Barbara Santa Barbara, CA — 2011-2013
M.A. in Physics

Carnegie Mellon University Pittsburgh, PA — 2007-2011
B.S. in Electrical & Computer Engineering | B.S. in Physics
Phi Beta Kappa | Academic scholarship for full tuition for 4 years

EXPERIENCE

Insight Data Science   *Fellow* — Jan 2018-Present
AutoSwipe.me
- Created automatic "swipe" predictor for online dating website Tinder that used facial feature detection and machine learning to learn individual user preferences and predict whether they would swipe right/left on new face
- Modeled user preference with gradient boosted decision tree (xgboost) which learned the user's preferences after the user swiped through over 100 profiles. Hosted site on AWS using Flask/python framework + PostgreSQL.

The University of Chicago   *Graduate Research*er — 2013-Present
- Collaborated with the Army Research Lab and a team of UChicago researchers on a 5-year research effort to create a prototype quantum network for secure communications using atomic defects in silicon carbide.
- Developed convolutional neural network to automatically classify the type of nuclear spin (Silicon or Carbon) being detected based on 2D images of MRI signal strength (z-axis) vs magnetic field & frequency (x & y axis).

UC Santa Barbara   *Graduate Research*er — 2011-2013
- Demonstrated how atom-sized defects in tiny diamonds function as quantum-enhanced nanoscale, bio-compatible thermometers that can measure temperatures inside living cells using just light, no electrical connections needed.
- Modeled quantum dynamics of a network of randomly connected nuclear magnets (spins) for new MRI contrast agent based on nanoparticles of silicon carbide to improve quality of MRI images.

GE Healthcare   *Reconstruction Algorithms Intern* — May-August 2010
- Built Monte Carlo tool to simulate the role of low x-ray signal to noise ratio on undesirable artifacts in reconstructed computerized tomography (CT) images of obese patients with high x-ray absorption.
- Developed an algorithm to adaptively combine low signal to noise data for more accurate CT reconstruction while preserving spatial resolution for best CAT scan image quality on patients weighing over 250 lbs.

PERSONAL PROJECTS

Geighborhoods.com — July 2017-Present
- Scraped thousands of profile images from gay dating app Grindr using Google Cloud OCR to extract watermarked location data text. Visualized results in interactive map of gay population density in major US cities.
- Used K-means clustering to automatically detect neighborhoods where ads showing gay men could be placed.

LEADERSHIP EXPERIENCE

- Treasurer of CMU Chapter of Society of Hispanic Professional Engineers — 2009-2011