

LENA BARTELL

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EDUCATION

- 2011 – 2018 **Cornell University** – Ph.D. in Applied Physics, Biomedical Engineering minor, 3.90 / 4.00
2007 – 2011 **Penn State University** – B.S. with Honors in Physics, Biomedical Engineering & Mathematics minors, 3.97 / 4.00

SKILLS

- LANGUAGES Python | MATLAB | SQL | LaTeX | HTML/CSS
TOOLS Git | Docker | AWS | Jenkins | Atlassian Suite | PyCharm | Jupyter | Protobuf | QGIS
ORGANIZATIONAL Agile Development | Task Leadership | Stakeholder Management | Business Development
PYTHON
 - Package creation & environment management: `pip`, `setuptools`, `poetry`, `virtualenv`, `pyenv`, `cookiecutter`
 - Software tooling: `loguru`, `pyyaml`, `confuse`, `dataclasses`, `nltk`, `pdoc3`
 - Testing frameworks & code standards: `pytest`, `black`, `unittest`, `snapshottest`, `mypy`
 - Data management: `Pandas`, `sqlalchemy`, `Scrapy`, `Kedro`
 - Data analysis: `NumPy`, `SciPy`, `scikit-learn`, `StatsModels`, `opencv`, `Pillow`
 - Data visualization: `Seaborn`, `Plotly`, `Matplotlib`
 - Geospatial & scientific computing: `pymap3d`, `pint`, `Shapely`, `geomag`

EXPERIENCE

- 2018 – PRESENT **Lead Data Scientist**
MORSE Corp, Cambridge, MA
 - Led team of 12 data scientists and software engineers developing unsupervised anomaly detection algorithms
 - Deployed AI algorithms to AWS cloud environments and realtime, protobuf-interfaced pipelines
 - Developed and delivered sales pitch resulting in over \$10M contract for AI services
 - Designed company-wide best practices for Python development and led associated training sessions
 - Contributed to company's first open-source project: [SnappierShot](#)
 - Built algorithms for physical modeling, optimization, and geospatial anomaly detection
 - Analyzed airdrop data to evaluate algorithm performance and optimize parameters of physical model
 - Interfaced with customers and users to collect feedback, present results, and deliver products
 - Led team of three engineers to create a web application with Python backend and JavaScript React frontend
 - Developed a suite of internal Python packages for physical modeling of airdrop systems used across programs
 - Developed data model with associated API and SQLite database for cross-program data
 - Planned and supervised data collection for airdrop test campaigns, coordinating with customers and staff
 - Conducted technical screens and in-person interviews for hiring data scientists and technical leads
 - Clearance: Secret (Interim Top Secret)

2018 **Data Science Fellow**
Insight, Boston, MA
 - Extracted and cleaned data (continuous, categorical, text) from 40-table relational database using Python and PostgreSQL
 - Modeled trial dropout rates using linear regression and random forests in Python
 - Deployed [online app via Dash/Heroku](#) to predict the number of patients that will drop out of a clinical trial

PROJECTS

- 2012 – 2018 **Injury-induced cellular dysfunction in articular cartilage (doctoral research)**
Cornell University, Ithaca, NY
 - Built custom mechanical testing stage, interfacing with optical microscopy to measure soft tissue properties
 - Analyzed multi-dimensional images (~20x5 GB) in MATLAB & Python to segment, track, & classify cell behavior
 - Quantified relationship between cell dysfunction and treatment using mixed-effects regression (linear, logistic)
 - Presented research quarterly in small-group meeting and at seven scientific conferences
 - Mentored five researchers and cultivated collaborations with veterinary surgeons and biomedical engineers

2017 **GUI for automated segmentation and classification of microscopy images (doctoral research)**

Cornell University, Ithaca, NY

- Developed custom image segmentation and classification algorithm based on the watershed transform
- Deployed image algorithm as a portable GUI using MATLAB, enabling non-technical collaborators to utilize vision techniques ([GUI and tutorial](#))
- Published training tutorial and distributed GUI to collaborators using GitHub

2015 – 2017 **4D flow behavior of protective glass coatings (doctoral research)**

Corning Inc., Corning, NY & Cornell University, Ithaca, NY

- Implemented N-dimensional Barnes smoothing interpolation in MATLAB, extending previously 2D algorithm
- Compiled and analyzed large, multi-dimensional confocal microscopy data sets using MATLAB and Python
- Collaborating with Corning Inc., coordinating quarterly presentations and final reports

2016 **WXPB radio “A to Z” marathon playlist analysis (personal project)**

Ithaca, NY

- Scraped playlist metadata from web and linked to additional open database APIs using Python
- Cleaned data and calculated summary statistics using Python
- Created and shared interactive visualization using Tableau and Twitter (links: [Tableau Viz](#), [News coverage](#))

2009 – 2011 **X-ray dosimeters for diagnostic breast cancer imaging (undergraduate thesis)**

University of Pennsylvania, Philadelphia, PA

- Designed, constructed, and studied the response of a custom X-ray dosimeter
- Simulated measurement biases of existing dosimeters from first-principles using MATLAB

LEADERSHIP EXPERIENCE & OUTREACH

2016 – 2017 *Homemade Microscope Outreach* – Design & produce module teaching high school students about imaging

2015 – 2016 *Student Employee* – Cornell McGovern Center for Venture Development in the Life Sciences

2014 – 2015 *Advisory Board Member* – NIH Broadening Experiences for Scientific Training program at Cornell

2009 – 2011 *President* – Penn State University Society of Physics Students

SELECT AWARDS & FELLOWSHIPS

2016 - 2018 NIH Individual F31 Predoctoral Fellowship Grant

2012 - 2015 NSF Graduate Research Fellowship

2011 - 2012 Cornell Presidential Life Science Fellowship (1 year graduate training & stipend)

2009 Goldwater Scholarship

2009 American Association of Physicists in Medicine Undergraduate Fellowship

2007 - 2011 Penn State Braddock Scholarship (4 years full tuition, room & board)

SELECT RESEARCH PRESENTATIONS

2014 – 2017 Poster or Podium Presentation, Orthopaedic Research Society

2014 Podium presentation, Society of Rheology

2013 Poster presentation, Gordon Research Conference: Soft Condensed Matter Physics

PATENT

2017 “Buckling technique to determine tissue engineered construct readiness,” U.S. Provisional Application, pending.

SELECT PUBLICATIONS

2020 [L.R. Bartell](#), et al. Journal of Orthopaedic Research 38(6), 1257-1267. doi: [10.1002/jor.24567](#)

2018 [L.R. Bartell](#), et al. Journal of Biomechanics 72, 63-70. doi: [10.1016/j.jbiomech.2018.02.033](#)

2017 [L.R. Bartell](#), L.J. Bonassar, I. Cohen. ArXiv Computer Vision and Pattern Recognition arXiv:1706.00815

2016 C.R. Henak, [L.R. Bartell](#), L.J. Bonassar, I. Cohen. Journal of Biomedical Engineering 139, 031004

2015 [L.R. Bartell](#), L.A. Fortier, L.J. Bonassar, I. Cohen. Journal of Biomechanics 48, 3440-3446