

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 **Data Science Task Lead**
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 prime contract for AI services
 - Guided company-wide best practices for Python development
 - Contributed to company's first open-source project: [Snappiershot](#)
 - Built algorithms for physical modeling, optimization, and geospatial anomaly detection
 - Analyzed experimental data to evaluate algorithm performance and optimize parameters
 - 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 (letsgetclinical.herokuapp.com/)

PROJECTS

- 2012 – 2018 **Injury-induced cellular dysfunction in articular cartilage (PhD Thesis)**
Cornell University, Ithaca, NY
- Built custom mechanical testing stage that interfaced with optical microscopy to measure soft tissue properties
 - Analyzed multi-dimensional imaging data sets (~20 × 5 GB) to segment, track, and classify cell behavior over space and time using MATLAB and Python
 - 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 (PhD thesis)**

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 (PhD thesis)**

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