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

ORGANIZATIONAL Technical design & management | Agile Development | Stakeholder Management | Business Development

LANGUAGES Python | MATLAB | SQL | LaTeX | HTML/CSS

TOOLING Git | Docker | AWS | Jenkins | Atlassian Suite | PyCharm | Jupyter | Protobuf | QGIS

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 Scientist, Chief Engineer
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
- Designed and 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: Top Secret
- Featured in Builtin Boston

2018

Data Science Fellow
Insight, *Boston, MA*
- Extracted and cleaned data (continuous, categorial, 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 (~20×5 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   **WXPN 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