

ANNE EN-TZU YANG

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SKILLS

- **Languages.** Matlab, Python, SQL, LaTeX, HTML, Javascript
- **Packages.** Pandas, Flask, Numpy, Scipy, scikit-learn, statsmodels, BeautifulSoup, Prophet, PostgreSQL, SQLAlchemy, matplotlib, Google Developers Charts, Matlab regionprops, Matlab nftool
- **Tools.** Git, Github, Jupyter Notebook, AWS (RDS, EC2, Route 53), Linux, API, 3Dslicer

EXPERIENCE

- **Data Science Fellow.** Insight Data Science (*Minneapolis, MN*) 09/2019 - present
 - Deployed an *html* web app recommending best time to ride Paris metro based on air quality prediction.
 - Utilized *Prophet* to predict hourly PM10 (pollutant) concentration, with a cross-validation error of 12% (by *SMAPE*). Forecast results are stored on *AWS* in *PostgreSQL* for web app queries via *Flask*.
 - Identified predictors correlated to air quality by $R^2 = 0.96$ using *scikit-learn's random forest regressor*.
 - Visualized results as *Google Charts* figures to provide intuitive information for health risks management.
- **Postdoctoral Researcher.** Inst. for Intelligent Systems and Robotics (*Paris, France*) 09/2018 - 08/2019
 - Designed a system of helical markers that enabled the 3D tracking of intraoperative surgical tools from individual 2D X-ray images.
 - Trained *convolutional neural networks* to successfully reconstruct deformable 3D shape and orientation at ~ 10 ms/frame (errors $< 1^\circ$) with medical (*DICOM*) images acquired from an operating room.
- **PhD Intern.** Sanofi, Translational Informatics Group (*Bridgewater, NJ*) 06/2017 - 08/2017
 - Collaborated with pharmacologists and immunologists on adding a new module to existing computational model to simulate periostin (protein) in asthma formation and treatment.
 - Wrote *Matlab* scripts to automate statistical tests and data visualization to expedite data analysis on 10k entries of clinical trial data.
- **PhD Candidate.** Northwestern University (*Evanston, IL*) 09/2012 - 08/2018
 - Investigated interdisciplinarily the neural pathway of rat whiskers to understand human's sense of touch.
 - Created a *MEMS*-sensor able to detect mechanical signals on a rat whisker of $< 200 \mu\text{m}$ diameter, which initiated a multi-university collaboration that later won a \$1M NSF grant.
 - Constructed static and dynamic models of tapered beams with elastic boundary conditions in *Matlab* and *Python* to quantify forces and moments on the whiskers when undergoing contact or airflow.
 - Predicted 4 categories of neural responses ($R^2=0.93$) from 420 sets of 100-ms data sampled at 10kHz.
 - Analyzed data of > 500 rat whiskers and built predictive models of whisker geometry by whisker identity.

EDUCATION

- **PhD.** Northwestern University (*Evanston, IL*) 09/2012 - 08/2018
 - Mechanical Engineering
- **Certificate.** Kellogg School of Management (*Evanston, IL*) 06/2016 - 08/2016
 - Management for Scientists and Engineers
- **BS.** National Taiwan University (*Taipei, Taiwan*) 09/2008 - 06/2012
 - Mechanical Engineering