ANNE EN-TZU YANG

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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 $\sim$ 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 μm diameter, which initiated a multi-university collaboration that later won a $1M NSF grant.
  - Constructed static and dynamic models of tapered beams in *Matlab* and *Python* to quantify forces and moments on the whiskers when undergoing contact or airflow.
  - Predicted the timing and magnitude of 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

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