

# Peiyuan Liao (Alexander)

www.linkedin.com/in/peiyuan-liao

Email : liaop20@kent-school.edu

Mobile : +1-860-671-7892

## EDUCATION

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- **Kent School** Kent, CT
  - *AP Calculus BC - 5, AP Computer Science A - 5, AP Chemistry - 5; GPA: 6.08 (out of 6)* Aug 2016 – present
    - **TOEFL: 116:** Reading: 30; Speaking: 26; Writing: 30; Listening: 30
- **Coursera** Online
  - *Neural Networks and Deep Learning, Mathematics for Machine Learning: Multivariate Calculus*
- **Carnegie Mellon University AP/EA** Pittsburgh, PA
  - *15-122: Principles of Imperative Computation, A; 21-127: Concepts of Mathematics, A* June 2018 – August 2018

## RESEARCH EXPERIENCE

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- **Co-Founder, Senior Researcher** Kent, CT
  - *Kent Artificial Intelligence Laboratory (KAIL)* April 2018 - present
    - **Summary:** Cooperating with researchers from Berkeley Artificial Intelligence Research (BAIR) and Stanford Artificial Intelligence Laboratory (SAIL)
    - **Website:** <https://github.com/Kent-AI-Laboratory>
- **First Author** Kent, CT
  - *Deep neural network based subspace learning of robotic manipulator workspace mapping* Sept 2017 - Feb 2018
    - **ICCAIRO 2018:** Paper accepted for presentation at ICCAIRO 2018 in Prague, Czech Republic, on May 19-21, 2018 (proceedings will be indexed in IEEE and ACM) and is invited to submit to SCI journals.
    - **Summary:** Using Subspace Learning to approximate the discretization method of workspace evaluation algorithm for serial-link manipulators.
    - **arXiv:** <https://arxiv.org/abs/1804.08951>
- **Patent Inventor (CN 201510502664.2)** Beijing, China
  - *Rapid Prototyping for Microgravity Environment* Jan 2015 - Nov 2015
    - **Summary:** Modifying the structure of an  $\mu$ SL printer so that the feeding of material is done by negative pressure
- **Research Intern** Beijing, China
  - *Institute of Computing Technology, Chinese Academy of Science* Summer 2017
    - **Summary:** Robot Kinematics; Spatial pose transformation, manipulator forward and invserse kinematics, and joint space trajectory planning

## PROJECTS

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- **Deep generative modeling for manipulator design:** Implementing the InfoGAN framework on 6-DOF spherical robotic manipulators to aid in dynamic structure design
- **PUMA560:** Interfacing with a PUMA (**P**rogrammable **U**niversal **M**achine for **A**ssembly) 560 in Kent Pre-Engineering Center and achieve trajectory planning and motion control through VAL II language

## AWARDS

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- **Kaggle Competitions Expert, ranked top 2% out of all users (1467/91108) as of August 2018:**
  - **TrackML particle tracking challenge:** Top 4%, led a team that placed 21/656 (Silver Medal)
  - **Home Credit Default Risk:** Top 3%, lead a team that placed 209/7198 (Silver Medal)
  - **Google AI Open Images - Object Detection:** Top 16%, placed 69/454 (solo) (Bronze Medal)
  - **Google AI Open Images - Visual Relationship:** Top 20%, placed 45/234 (solo) (Silver Medal)

## SKILLS

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- **Programming Languages:** MATLAB (proficient), Python (proficient), TeX (familiar), Java (familiar), C (familiar)
- **Platforms and Libraries:** Ubuntu, PyTorch, Keras, TensorFlow, Robotics Toolbox, Scikit-learn, Pandas
- **Fields of Interest:** Deep Learning, Generative Modeling, Artificial Intelligence, Computer Vision, Robotics
- **Languages:** English (bilingual), Chinese (bilingual), French (intermediate)