Shinya Kondo

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EDUCATION

University of Pennsylvania, *School of Engineering and Applied Science* **Philadelphia, PA**
M.S. Mechanical Engineering, **GPA 3.91** **August 2022**
Relevant Coursework: Machine Learning, Turbulence, Numerical Methods of PDEs

Columbia University, *School of Engineering and Applied Science* **New York, NY**
B.S. Mechanical Engineering, **GPA 3.81**, *Cum Laude* **May 2020**
Relevant Coursework: Partial Differential Equations, Continuum Mechanics, Heat Transfer

RESEARCH EXPERIENCE

Professor George Ilhwan Park Computational Fluids Group **Philadelphia, PA**
Research Assistant **August 2020 – September 2022**

- Coded MATLAB scripts to extract dominant energetic structures and create reduced-order models of fluid flows
- Coded Python scripts that train machine learning models to understand pattern formations in complex fluid flows
- Carried out stability analysis of linearized Navier-Stokes equation to derive mechanism of turbulence production
- Created meshes and ran turbulent flow CFD simulations in C++ using High Performance Computing clusters

KEY PROJECTS:

1. Reconstruction of 3D turbulent channel flow using deep convolutional autoencoder **(Python/Pytorch and MATLAB)**
2. A priori comparison of a reduced-order subgrid-scale turbulence model from resolvent analysis framework **(MATLAB)**
3. Reduced-order reconstruction of fluid flow behind an oscillating cylinder using modal analysis **(C++ and MATLAB)**

Professor Marco Giometto Turbulence Research Group **New York, NY**
Undergraduate Research Assistant, Lead Experimenter **May 2019 – July 2020**

- Derived analytical solution of wake formations behind wake generating objects under an applied pressure gradient
- Carried out CFD analysis of wind turbines using the RANS solver in ANSYS Fluent and OpenFOAM

KEY PROJECTS:

1. Structural Failure of Wind Turbines in Extreme Wind Conditions **(ANSYS Fluent, ANSYS Structural and MATLAB)**
2. Comparison of turbulence closure models for RANS simulation of wind engineering applications (**ANSYS Fluent)**

Professor Alissa H. Park Applied Climate Science Research Group **New York, NY**
Undergraduate Research Assistant **January 2017 – January 2019**

- Lead experiments on far from equilibrium basalt dissolution and basalt carbonation kinetics for carbon sequestration
- Carried out experiments on precious metal extraction from Electronic Waste using supercritical CO2

LEADERSHIP EXPERIENCE

Columbia University NCAA Division I Varsity Student Athlete: Swimming and Diving **August 2016 – May 2020**
Team Captain

- 30+ hours of weekly practice consisting of in-water practice, dryland practice, strength conditioning and competition
- Consolation Finalist at Ivy League Championships (2017, 2019) NCAA Zone Qualifier (2017, 2018, 2019, 2020)

Columbia University Asian Pacific-Islander American Heritage Month **August 2017 – May 2020**
President

- Facilitate weekly meetings to discuss current events in the API community and plan upcoming widescale events
- Carry out logistics including booking event space, organizing advisor meetings and allocating a club budget of $10,000

HONORS

- NSF Graduate Research Fellow (2021 – 2022)
- Columbia University Mechanical Engineering Certificate of Merit (2020)
- Columbia University Nathaniel Arbiter Scholarship (2018, 2020)
- Pi Tau Sigma Honors Society (2020)
- Columbia University Dean's List (all semesters)
- CSCAA Scholar Athlete (2017, 2018)

SKILLS AND INTERESTS

- Computer: Microsoft Office Suite, Solidworks, ANSYS Fluent, ANSYS Structural, COMSOL
- Computer Languages: Python (Pytorch), MATLAB (Numerical Methods and Algebra) and C++ (OpenFOAM)
- Language: Fluent in Japanese, Intermediate Spanish
- Interests: Mechanics of Swimmers and Flyers, Modular Origami, and Piano