Kelly Yi-Chun Huang

Mechanical and Aerospace Engineering	Princeton University
. Mechanical and Aerospace Engineering	Princeton University
Mechanical Engineering	Cornell University
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Research

University of Notre Dame

2021 — present	As postdoc working with Prof. Joe Fernando, I
	designed the Super Combo Probe that measures micro-scale velocity and
	temperature in the atmosphere, and
	deployed various atmospheric sensing instrumentation in the FATIMA ONR
	MURI program on Sable Island, Canada to shed light on the lifecycle of fog.
	Princeton University
2016 - 2021	Experimental Methods for Understanding Turbulence in the Lower Atmosphere

- As graduate student working with Prof. Marcus Hultmark, I
- fabricated nano-scale velocity and temperature sensors in the clean room,
- designed and deployed data acquisition platforms for nano-sensors in the Utah salt flats to study canonical turbulent boundary layer behavior,
- analyzed near-surface atmospheric velocity and temperature data, and
- designed a low-cost active grid for studying mosquito tracking behavior.

Cornell University

2015 — 2016	As undergraduate research assistant with Prof. Charles Williamson, I designed, fabricated, and tested 3D-printed innovative blades for a mini vertical-axis wind turbine for urban settings.
2012 — 2014	In AguaClara sustainable water treatment design, I built and analyzed a lab- scale rapid sand filter and an electric-free ram pump.
2014 — 2015	As member of Cornell University Sustainable Design, we

- conducted a wind power feasibility study for the Cornell NYC campus,
 - formulated a proposal for local wind turbine implementation, and
 - constructed a functioning demonstrative wind turbine for outreach.

National Renewable Energy Laboratory

Summer 2015As Science Undergraduate Laboratory Intern (SULI) to Dr. Katherine Dykes,
I developed a Python toolbox coupled to OpenMDAO that optimizes the spar
supporting structure of offshore wind turbines based on stability designs.

Honors and Awards

2020 2019 2017 2016 2015	Engineering Council's Excellence in Teaching AwardPrincetonThe Luigi Crocco Award for Teaching ExcellencePrincetonNational Defense Science and Engineering Graduate FellowshipDoDFrancis Robbins Upton Fellowship in EngineeringPrincetonUndergraduate Student of the YearCornell Diversity Programs in Engineering
Teaching	
	Princeton University
2017 — 2021	As Graduate Coordinator for the McGraw Learning and Tutoring Center, I manage the undergraduate tutoring program by interviewing, staffing, training, and providing feedback for 140+ tutors.
Fall 2019 Spring 2019 Spring 2018 Fall 2017	As assistant in instruction, I held weekly precepts/lab sessions for MAE 305/MAT 391 – Mathematics in Engineering I MAE 222 – Introduction to Fluid Mechanics MAE 224 – Integrated Engineering Science Laboratory MAE 335 – Fluid Dynamics
Fall 2022 Spring 2022	As a guest lecturer, I have taught MAE 551 — Fluid Dynamics MAE 553 — Turbulence
	Cornell University
Fall 2015 Fall 2015 Spring 2015 Fall 2014	As undergraduate teaching assistant, I held weekly recitations/lab sessions for = MAE 3230 – Introduction to Fluid Mechanics = MAE 6510 – Advanced Heat Transfer = MAE 2250 – Mechanical Synthesis = ENGRD 2020 – Statics and Mechanics of Solids
	University of Notre Dame
Fall 2021 & 2022 Fall 2021 — Spr 2023 Spring 2023	As a guest lecturer, I have taught = CE/AME 40465/60465 — Mechanics of Environmental Motions = CE 62400 — Environmental Fluid Dynamics Practicum = CE 60430 — Fundamentals of Turbulence Theory
	Student Thesis Supervision
2018 — 2019	Ramesh, Gayatri & Huang, Whitney – B. S., Princeton University Controlling Unmanned Aerial Vehicles in High Wind Speeds Using Nano-Scale Thermal Anemometry Probes
2021 - 2023	Hintz, Thomas J. — M. S., University of Notre Dame A Mechanism for Coastal Fog Genesis at Evening Transition

Service

	Princeton University
2016 – 2021	As part of MAE department educational outreach efforts, I • undertook coursework on effective science pedagogy for children, • developed workshops on engineering concepts, and • led demos for K-8 children from Princeton and New York City.
2017 – 2020	As representative, then Chair, of the MAE Graduate Student Council, I – organized graduate student events (i.e., open-house and alumni panels), and – organized and hosted the annual MAE Research Day.
	Referee/Reviewer

2021 – present Experiments in Fluids

Invited Presentations

2021	University of Notre Dame — Environmental Fluid Dynamics Seminar Experimental Methods for Understanding Turbulence in the Lower Atmosphere.
2021	University of California, Davis — Environmental Dynamics Lab Seminar <i>Experimental Methods for Studying Turbulence in the Lower Atmosphere</i> .
2020	Cooper Union — Albert Nerken School of Engineering Invited Lecture From Mosquitos to Weather Models — Understanding Turbulence in the Lower Atmosphere.

Select Presentations

2022 [Talk]	American Physical Society: Division of Fluid Dynamics
	The role of environmental turbulence in the lifecycle of marine fog.
2022 [Talk]	American Meterological Society Annual Meeting
	The Super Combo Probe for simultaneous high-resolution measurement of velocity
	and temperature fluctuations in atmospheric turbulence.
2020 [Poster]	American Geophysical Union: Fall Meeting
	Velocity and Temperature Dissimilarity in the Surface Layer Uncovered by the
	Telegraph Approximation.
2018 [Poster]	American Geophysical Union: Fall Meeting
	Simultaneous and Well-resolved Velocity and Temperature Measurements in the
	Atmospheric Surface Layer.
2018 [Talk]	American Physical Society: Division of Fluid Dynamics
	Mimicking Atmospheric Flow Conditions to Examine Mosquito Orientation Be-
	havior.

Publications

In Preparation	T. J. Hintz, K. Y. Huang, S. W. Hoch, J. Ruiz-Plancarte, and H. J. S. Fernando, "A Mechanism for Coastal Fog Genesis at Evening Transition."
Peer-Reviewed	K. Y. Huang, G. G. Katul, T. J. Hintz, J. Ruiz-Plancarte, and H. J. S. Fernando, "Fog intermittency and critical behavior", <i>Atmosphere</i> (2023).
	H. J. S. Fernando, S. Wang, <u>K. Y. Huang</u> , and E. Creegan, "Fog-laden density staircases in marine atmospheric boundary layer", <i>Environmental Fluid Mechanics</i> (2023).
	K. Y. Huang, M. K. Fu, C. P. Byers, A. D. Bragg, and G. G. Katul, "Logarith- mic scaling of higher-order temperature moments in the atmospheric surface layer", <i>International Journal of Heat and Fluid Flow</i> .
	K. Y. Huang and G. G. Katul, "Profiles of high-order moments of longitudinal velocity explained by the random sweeping decorrelation hypothesis", <i>Physical Review Fluids</i> (2022).
	K. Y. Huang, C. E. Brunner, M. K. Fu, K. Kokmanian, T. Morrison, A. O. Perelet, \overline{M} . Calaf, E. Pardyjak, and M. Hultmark, "Investigation of the Atmospheric Surface Layer Using a Novel High-resolution Sensor Array", <i>Experiments in Fluids</i> (2021).
	K. Y. Huang, G. G. Katul, and M. Hultmark, "Velocity and temperature dis- similarity in the surface layer uncovered by the telegraph approximation", <i>Boundary-Layer Meteorology</i> (2021).
Conference Proceedings	K. Y. Huang, M. K. Fu, C. P. Byers, and G. G. Katul, "Logarithmic scaling of higher-order temperature moments in the atmospheric surface layer", <i>12th Int. Symp. on Turbulence and Shear Flow Phenomena, Osaka, Japan</i> (2022).