Newton Huy Nguyen

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EDUCATION

Ph.D. Candidate, California Institute of Technology | Environmental Engineering Science 2018-Present
Thesis: Algorithms and Techniques to Optimize Sensing of Greenhouse Gases.
Supervisor: Christian Frankenberg

M.S., California Institute of Technology | Environmental Engineering Science 2017-2018
Thesis: Quantifying Global Methane Emissions with Bayesian Models.
Supervisors: Tapio Schneider & Christian Frankenberg

B.A., University of California at Berkeley | Geophysics, Highest Honors 2012-2016
Thesis: Neural Networks to Model Fluid Flows.
Supervisor: Bruce Buffett.

TECHNICAL PROJECTS

SpectralFits.jl, Julia & Python June 2020-Present
- Designed & implemented flexible interface for retrieving GHG concentrations and vertical profile from multiple spectroscopic products (e.g., TCCON, OCO2, dual-comb spectroscopy, etc.)
- Resulted in 2 invited talks and 1 peer-reviewed publication.

OHMethane, Julia & MATLAB Jan 2018-Present
- Developed 4-box model to simulate atmospheric methane chemistry & infer global emissions given chemical constraints using Bayesian optimization.
- Resulted in 2 conference presentations and 2 peer-reviewed publications (1 under revision).

RESEARCH POSITIONS

Ph.D. Candidate, Caltech Sep 2017-Present
Supervisor: Christian Frankenberg
- Designed & implemented 4 research projects on quantifying & monitoring methane emissions, integrating advances in physical, chemistry, instrument engineering, & statistical computing.
- Authored & was rewarded NSF GRFP fellowship to modernize methane monitoring capabilities.
- Mentored 2 students & 1 software engineer in developing satellite remote sensing techniques.

Research Assistant, Lawrence Berkeley National Laboratory June 2016 - July 2017
Supervisors: Daniel Feldman & William D Collins
- Team member on NASA's CIARReO Science Team
- Investigated cloud-climate feedback using NASA satellite products.
- Parallelized a numerical radiative transfer model for super-computing capabilities (MPI and Fortran).
- Resulted in 2 peer-reviewed publications & an award for best conference presentation

Summer Research Fellow, Computational & Applied Sciences Lab, UC Santa Barbara Summer 2015
Supervisors: Frederick Gibou

Summer Research Intern, UC Berkeley Hydro-seismology Lab Summer 2014
Supervisor: Chi Wang

HONORS & AWARDS

Caltech Engineering Division New Horizons Prize for Excellence in Mentorship & Service	2021
National Science Foundation Graduate Research Fellowship for Scientific Merit *NSF*	2018
Boston Marathon Qualifier	2019, 2020
3rd Place, US Blind Athletes National Championships in the Marathon	2019
1st Place, Collegiate Triathlon National Championships in Para-athlete division	2016
"UC Leads" Fellowship Best Presentation Award	2014-2016
Albert Newman Fellowship	2014
Berkeley Academic Merit Scholarship	2013-2016

PUBLICATIONS

Google Scholar: https://scholar.google.com/citations?user=AziOzdwAAAAJhl=enoi=sr
Orcid ID: 0000-0002-9118-8672

Submitted, in review, or in revision:

3. H Don-Kirschner, **N.H. Nguyen**, C Frankenberg , W.W. Fischer.(In Revision) Methanotrophy as a key negative feedback on atmospheric methane.*Geophysical Research Letters*.
2. **N.H. Nguyen**, K Cossel, E Waxman, N Newbury, I Coddington, C Frankenberg.(In Prep) Towards long-term greenhouse monitoring with frequency combs. *Atmospheric Measurement Techniques*.
1. **N.H. Nguyen**, K Cossel, E Waxman, N Newbury, I Coddington, C Frankenberg.(In Prep) Vertical profile retrieval for greenhouse gases with frequency combs. *Atmospheric Measurement Techniques*.

In print, in press or accepted:

3. **N.H. Nguyen**, A.J. Turner, Y Yin, M.J. Prather, C. Frankenberg. (2020) Effects of Chemical Feedbacks on Decadal Methane Emissions Estimates. *Geophysical Research Letters*. https://doi.org/10.1029/2019GL085706.
2. W.D. Collins, D.R. Feldman, **N.H. Nguyen**. (2018) Large regional shortwave forcing by anthropogenic methane informed by Jovian observations. *Science Advances*. https://doi.org/10.1126/sciadv.aas9593.
1. D.R. Feldman, W.D. Collins, Y Shea, **N.H. Nguyen**, X Liu, B Wielicki. (2016) Observing Climate Change With Both Shortwave and Longwave Hyperspectral Satellite Instrumentation. *Light, Energy & the Environment*. https://doi.org/10.1364/HISE.2016.HW2F.1.

Other publications

3. **Caltech** (2021) | Report of the committee on student admissions and recruitment [pdf]
2. **American Association of Physics Teachers** (2021) | Increase investment in accessible physics labs: a call to action for the physics education community [pdf]
1. **Glass Door** (2017) | A Triathlete Shares His 5 Secrets to Success [link]

INVITED PRESENTATIONS

Technical Talks

University of Texas, Austin, Dept Seminar (2022) | "From source to sink: constraining past & present methane emissions"
Harvard, Atmospheric Chemistry Group (2021) | "Biological, dynamic, and chemical drivers of methane destruction"
Caltech, ESE Dept Seminar (2021) | "Destructive interference: frequency combs for greenhouse gas remote sensing"
Caltech, Spectroscopy Group (2021) | "Improved spectroscopy for long-term greenhouse gas remote sensing"
Caltech, Astronomy Dept (2019) | "Monitoring climate change from space"

Invited Outreach Talks

Coca-Cola Headquarters (2022) | "Activism and perseverance in the Asian Community"
Reclaiming STEM (2021) | "Disability in Science"
Communication Science Conference (ComSciCom) (2021) | "DEI in STEM"
National Assoc. of Blind Students (2021) | "Communicating as a blind presenter"
National Federation of the Blind (2021) | "Designing your environment: how to succeed as a blind scientist"
National Federation of the Blind (2019) | "Developing tools for blind scientists"
Aira Corporation (2018) | "Being a blind scientist"

CONFERENCE PRESENTATIONS

N.H. Nguyen, K Cossel, E Waxman, N Newbury, I Coddington, C Frankenberg. (2021) Destructive Interference: Future Long-term Greenhouse Gas Monitoring with Dual-Comb Spectroscopy Needs More Accurate Spectroscopic Parameters. Poster Presentation, American Geophysical Union, San Francisco, CA.

N.H. Nguyen, C Frankenberg, A.J. Turner, Y Yin, M.J. Prather. (2019) Quantifying the Effect of Neglecting Variable Methane Lifetime on Methane Emissions Estimates, Poster Presentation, American Geophysical Union, San Francisco, CA.

N.H. Nguyen, C Frankenberg, Y Yin, A.J. Turner. (2018) Effects of Methane and Hydroxyl Radical Chemistry on Decadal Methane Emissions Estimates, Poster Presentation, American Geophysical Union, San Francisco, CA.

D Feldman. W.D. Collins, B.A. Wielicki, Y Shea, M.G. Mylnczak, C Kuo, **N.H. Nguyen**. (2017) How Continuous Observations of Shortwave Reflectance Spectra Can Narrow the Range of Shortwave Climate Feedbacks, Poster Presentation, American Geophysical Union, San Francisco, CA.

LEADERSHIP & SERVICE

Co-founder, Systemic Access Mentorship Program Aug 2020-Present
- Organized & coordinated national mentorship program for blind students in STEM globally (40 participants)
- Conduct virtual meetings 2x a month and meet with mentees regularly.

Co-founder, President, & Treasurer of Caltech Disability Coalition 2020-2022

Caltech Graduate Admissions Policy Committee Sep 2020 - March 2021
- Selected by the President of Caltech to be student representative for the faculty committee tasked with increasing student body diversity & rewriting graduate admissions policies
- Proposed 3 policies for reducing admissions biased, which were implemented by the university

American Association of Physics Teachers Committee for Accessible Labs 2019-2021
- Member of committee tasked with improving disability access in K-12 and University physics labs.
- Committee resulted in white paper on best practices & a conference presentation.

Caltech Graduate Student Council 2018 - 2020
- Representative for Engineering & Applied Sciences
- Member of the Advocacy & Diversity Sub-committee

Founder & President, Caltech Triathlon Club Sept 2019-Present
- Coached track and biking practices for more than 20 athletes
- Organized and coordinated a 3-race series involving 100 participants from 11 schools

Lawrence Berkeley National Lab 2016-2017
- Member of lab-wide Employee Accessibility Committee
- Climate & Ecosystem Science Division Representative for Diversity & Inclusion
- DEI Representative for the Dept of Energy External Review Committee

President, UC Berkeley Atmospheric Science Association 2015-2016

PRESS

SoCaltech: #SoCaltech: Newton Nguyen — March 2022
Runners' World Magazine: How Running Has Helped Newton Nguyen Navigate Life as a Blind Man — Oct 2021
Ally Commercial: We're All Better Off With An Ally — Jul 2021
Mini-Documentary: Marathoning Through Life with Vision Loss — Oct 2021
Careers for the Blind Podcast: Episode 35 - Climate Scientist Newton Nguyen — Oct 2021
Caltech Magazine: Creating a More Inclusive Caltech — Fall 2020
ScienceDaily: By Jove! Methane's effects on sunlight vary by region — Sept 2018
Berkeley National Lab News: Newton Nguyen's Vision Loss Doesn't Slow Him Down — Oct 2016
KTVU News: 98 percent blind Cal Berkeley student competes as triathlete — March 2015

TEACHING EXPERIENCE

ESE103 Biogeochemistry | TA S2019; Christian Frankenberg; Rating: 5/5
ESE156 Remote Sensing of the Atmosphere & Biosphere | TA F2019; Christian Frankenberg; Rating: 5/5
Scientific Writing & Communication at UCLA | TA Summer 2019

TECHNICAL SKILLS & EXPERTISE

Skills: Python | Julia | R | Matlab | Fortran | Git | Bash | Numpy/Scipy | SKLearn/Pytorch

Expertise: Numerical computing | Probability | Bayesian statistics | High-performance computing | Greenhouse gas emissions | Remote sensing | Satellite spectroscopy | Machine learning

Memberships: American Geophysical Society (2014 - Present) | American Meteorological Society (2017 - Present)