

# (PHUONG) NAM VU

Address: Lafayette College, 111 Quad Dr PO Box 8735, Easton, PA 18042

Phone number: (484) 542-3887 | Email: [yunp@lafayette.edu](mailto:yunp@lafayette.edu)

## EDUCATION

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**Lafayette College**

**Easton, PA, United States**

Dual Degree: *B.S. Mathematics* | *B.S. Integrative Engineering*

Aug 2021 - Present

- **Cumulative GPA: 3.96/4.0**

- **Dorflinger Research Grant, EXCEL Research Scholar, Creative and Performing Arts (CaPA) Scholar**

**High School for the Gifted, Vietnam National University, HCMC**

**Ho Chi Minh, Viet Nam**

*Mathematics Major*

Graduated July 2021

- **Overall GPA: 9.2/10**

## HONORS AND AWARDS

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- **Benjamin F. Barge Mathematical Prize**

**Easton, PA, Spring 2023**

- **First prize in Lafayette College Team Barge Competition**

**Easton, PA, Fall 2022**

- **First prize in Lehigh Valley Assoc. of Indep. Colleges Mathematics Contest**

**Easton, PA, Fall 2022**

- **Honorable Mention in Mathematics in National Academic Competition**

**Viet Nam, 2020**

## RESEARCH EXPERIENCE

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### YALE UNIVERSITY

**Variational Quantum Eigensolvers on Bosonic Modular Processors**

Summer 2023 - Present

*National Science Foundation (NSF) Center for Quantum Dynamics on Modular Quantum Devices*

- Advisor: Prof. Victor Batista.

- Developing computational algorithms for variational quantum computing implementable on bosonic modular processors and creating tutorials introducing quantum computing to the undergraduate chemistry curriculum.

### LAFAYETTE COLLEGE

**Computational Characterization of Information Transfer in Proteins**

Summer 2022 - Present

- Advisor: Prof. Heidi Hendrickson.

- Investigating signal transduction pathways of Prostaglandin proteins via molecular dynamics simulations and transfer entropy calculations.

**Evolutionary Dynamics of Small Symmetric Games**

Fall 2022 – Spring 2023

- Advisor: Prof. Rob Root.

- Analyzed evolutionary dynamics of populations that can be described by replicator equations.

**Calibration of Complex Tumor-Growth Models using Active Subspace Methods**

Summer 2022

- Advisor: Prof. Allison Lewis.

- Constructed dynamical active subspace to reduce the high dimensionality of complex ODE systems, enhancing parameter identifiability, model fit error, and computational run-time.

## PUBLICATIONS

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**Vu, P.N.,** Ali, L., Chua, T., Barr, D., Hendrickson, H., & Trivedi, D. (2023). Computational Insights into Prostaglandin  $E_2$  Ligand Binding and Activation of G-Protein Coupled Receptors. *ACS Applied Bio Materials*, Article ASAP. <https://doi.org/10.1021/acsabm.2c01049>.

**Vu, P.N.,** Lewis, A. (2023). Using Dynamic Active Subspaces to Construct Surrogate Models for Calibrating Tumor Growth Models to Data. *The PUMP Journal of Undergraduate Research*, 6, 1-28.

<https://journals.calstate.edu/pump/article/view/3493>.

## ORAL PRESENTATIONS

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**Vu, P.N.**, Lewis, A. Using Dynamic Active Subspaces to Construct Surrogate Models for Calibrating Tumor Growth Models to Data. *Joint Mathematics Meetings 2023, AMS-SIAM Special Session on Research in Mathematics by Undergraduates and Students in Post-Baccalaureate Programs IV*. Boston, MA, January 2023.  
<https://meetings.ams.org/math/jmm2023/meetingapp.cgi/Paper/17042>.

## POSTER PRESENTATIONS

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**Vu, P.N.**, Ali, L., Chua, T., Barr, D., Hendrickson, H., & Trivedi, D. Computational Insights into Prostaglandin  $E_2$  Ligand Binding and Activation of G-Protein Coupled Receptors. *Lehigh Valley ACS Undergraduate Research Presentation*. DeSales University, Center Valley, PA, April 2023.

**Vu, P.N.**, Chua, T., & Hendrickson, H. Investigating Activation and Inhibition Mechanisms in Prostaglandin  $E_2$  Receptors. *The 2022 MERCURY Conference for Undergraduate Computational Chemistry*. Furman University, Greenville, SC, July 2022.

## MUSICAL PERFORMANCES

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**Vu, P.N.**, Gomi, M. *World Piano Day Celebration*. Easton, PA, March 2023.

**Vu, P.N.**, O'Riordan, K. *Pennsylvania Music Teachers Association Conference 2022*. Champion, PA, June 2022.

**Vu, P.N.**, Gomi, M. *Faculty Artist Series: The Music of Kirk O'Riordan*. Easton, PA, April 2022.  
<https://www.kirkoriordan.com/performances.html#2022>

**Vu, P.N.** *300<sup>th</sup> Anniversary of The Well-Tempered Clavier Book I*, The Bach Choir of Bethlehem. Bethlehem, PA, April 2022.

## LEADERSHIP AND OTHER EXPERIENCE

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**Engineering Peer Mentor/Grader** **Spring 2023**

- Hosted weekly support sessions and graded students' assignments in Systems 1 (ES 103).

**Supplemental Instruction (SI) Leader** **Fall 2022**

- Provided assistance for students in General Chemistry 1 (CHEM 107).
- Attended classes, created worksheets, hosted weekly SI sessions and drop-in hours while working closely with faculty members to provide students with the most valuable course preparation possible.

**Calculus Calvary Tutor** **Spring 2022 – Present**

- Hold weekly drop-in sessions to help students with homework problems and course material for calculus courses in the sequence MATH 125/141/161/165 – 162 – 263.

**Pianist** **Fall 2021 – Present**

- Performed at Lafayette College Music Department Honors Recital every semester.

**Engineering Student Assistant** **Fall 2021 – Spring 2022**

- Assisted with clerical work and organizing events throughout the Engineering Division.

## RELEVANT SKILLS

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- **Programming/Scripting Languages:** Bash, MATLAB, Python, Mathematica.
- **Software Packages:** Gaussian16, AMBER, VMD, PyMOL, L<sup>A</sup>T<sub>E</sub>X, Strawberryfields.
- High-Performance Computing (HPC) Cluster.
- **Languages:** Vietnamese (native), English (professional proficiency), Mandarin (elementary proficiency).