



Program Details

First Choice	
Campus	Purdue West Lafayette (PWL)
Major	Computer Science
Degree Objective	Doctor of Philosophy (PhD)
Area of Interest	Machine Learning/Artificial Intelligence
Course Delivery	Residential
Term/Year	Fall 2023
Campus	
Major	
Degree Objective	
Area of Interest	
Course Delivery	
Term/Year	
Campus	
Major	
Degree Objective	
Area of Interest	
Course Delivery	
Term/Year	



Biographical Information

Biographical

First Name	John
Last Name	Wu
Sex	Male
Birthdate	10/08/2000

Contact

Email	jhnwu3@gmail.com
Phone	+1 614-638-7981
Mobile	+1 614-638-7981
Mailing Address	7160 Sumption Dr New Albany, OH 43054-4003 United States
Permanent Address	7160 Sumption Dr New Albany, OH 43054-4003 United States

Citizenship

Citizenship Status	United States Citizen
Primary Citizenship	United States

Ethnicity

Hispanic	No
Race	Asian

Military Affiliation Information

Required Question: At the time of enrollment, do you expect to hold an active affiliation or position with a non-US military organization or security/intelligence agency?

No

I am willing to receive important text messages from the Graduate School

Yes

Citizenship Status	U.S. Citizen
--------------------	--------------

Emergency Contact

Form Title	Emergency Contact
Relationship	Parent/Guardian
First Name	Yunpeng
Last Name	Wu
Email Address	yw20002000@gmail.com
Street/P.O. Box/Apartment	7160 Sumption Drive
City	New Albany
Country	United States
State	OH
Zip/Postal Code	43054
U.S. Area Code	740
U.S. Telephone	8568054



Residency

Form Title	Residency
Residency	
Please choose your state or Indiana county of residence (required for all U.S. Citizens and Permanent Residents)	Ohio
Do you believe you qualify for in-state tuition?	No



Campus and Program

Form Title	Campus and Program
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Purdue University Status

Are you currently a registered graduate student at one of the Purdue University campuses? (This does not include the Purdue University Global campuses.)	No
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Select your current status as it pertains to Purdue University (this does not include the Purdue University Global campuses).	New to Purdue
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Are you currently a Purdue employee (including a graduate staff member) on any Purdue campus? If yes, indicate your PUID in the field above.	No
--	----

I consent and authorize Purdue University faculty and/or staff to access my Purdue University academic record for University business (Applicants that don't consent must still upload Purdue transcripts).	Yes
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First Choice Campus and Program

Select a Campus	Purdue West Lafayette (PWL)
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Select your Proposed graduate Major	Computer Science
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Are you interested in applying to a second campus and/or graduate major?	No
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Computer Science Questionnaire

Form Title	Computer Science Questionnaire
Do you have a doctoral degree in any field?	No
Are you currently enrolled in a doctoral program in any field?	No
Please indicate up to four additional areas of potential interest:	Bioinformatics and Computational Biology
	Computational Life Sciences
	Graphics and Visualization
	Machine Learning and Information Retrieval
1.	Raymond Yeh
2.	Rajiv Khanna
3.	Yexiang Xue
Have you served as a teaching assistant?	Yes
Do you have other teaching experience?	Yes
Upload Document	Uploaded 11/29/2022



Academic History

Undergraduate #1	
Institution	Ohio State University (001592)
Dates of Attendance	08/2019 - 05/2023
Location	Columbus, OH, United States
Degree	Bachelor of Science: 05/2023
Major	Computer Science and Engineering
GPA	3.939 / 4



Additional Information

Form Title

Additional Information

Are you seeking a Purdue University graduate assistantship or fellowship?

Graduate Professional Assistantship

Graduate Research Assistantship

Graduate Teaching Assistantship

Yes, non-Purdue Fellowship

Are you seeking external funding from outside Purdue University?

Yes, other non-Purdue funding

Please describe non-Purdue Fellowship:

NSF GRFP

Please describe non-Purdue funding:

DoD NDSEG Fellowship

Did you attend a U.S. High School?

Yes

High School Name

New Albany High School

High School City

New Albany

High School State

OH

Certifications

Do you hold a teaching or other certification?

No

Publications

List publications

John Wu, William CL Stewart, Ciriya Jayaprakash, and Jayajit Das, "Generalized Method of Moments Improves Parameter Estimation in Biochemical Signaling Models of Time-Stamped Single-Cell Snapshot Data." BioRxiv, Preprint, 1 Jan. 2022, <https://www.biorxiv.org/content/10.1101/2022.03.17.484491v1>. Under review in PLOS Computational Biology.

Seth Ockerman, John Wu, Zitchen Zhang, et al. (2023). "A Reflection on AI Model Selection for Digital Agriculture Image Datasets". To appear in the 37th Association for the Advancement of Artificial Intelligence Conference (AAAI-23).

Purdue University Non-Credit Courses

Have you previously completed a non-credit course or program

No

Additional Information (continued)

with Purdue University that is a
pathway to credit?

How did you hear about Purdue?

How did you originally hear about Purdue?	Friend/Family Member
---	----------------------

Employment

Job #1

Organization Name	The Ohio State University
Dates of Employment	08/2021 - 12/2021
Ending Position	Teaching Assistant
Description	<ul style="list-style-type: none">• Assisted with instruction of Introduction to C++ course to class size of 40 students.• Tutored freshman engineering students in office hours.• Graded labs and coding assignments, giving constructive feedback.
Location	Columbus, OH, United States
Direct/Indirect Reports	1
Hours	12
Employment Type	Part-time
Pre/Post Baccalaureate	Pre-Baccalaureate

Job #2

Organization Name	Converge Technologies
Dates of Employment	05/2020 - 08/2020
Ending Position	Software Intern
Description	<ul style="list-style-type: none">• Developed Selective Harmonic Elimination Pulse Width Modulation firmware for lab-grade industrial coolers, improving power efficiency.• Programmed microcontrollers' interrupt vectors to setup failsafes in case of power failures.• Assisted in pre-prototyping research, devising early plans for prototype design and bills of materials.• Tested analog-digital camera sensors, ensuring functionality and quality standards.
Location	Hilliard, OH, United States
Direct/Indirect Reports	3
Hours	40
Employment Type	Internship
Pre/Post Baccalaureate	Pre-Baccalaureate

Reference

Reference #1

Name	Dr. Jayajit Das
Organization	Nationwide Childrens Hospital
Title	Associate Professor of Pediatrics
Relationship	PI
Phone	+1 614-355-5632
Email	jayajit.das@nationwidechildrens.org
Name Displayed to Recommender	John Wu
Waiver	Do you wish to waive your right to examine this letter of recommendation? (Waiving your right means you will not have access to view the submitted letter of recommendation.)
Waiver Response	I waive my right to access this report.
Waiver Signature	John Wu
Recommendation Requested	11/30/2022
Recommendation Submitted	Not Submitted

Reference #2

Name	Dr. Christopher Stewart
Organization	The Ohio State University
Title	Associate Professor of Computer Science and Engineering
Relationship	PI
Phone	+1 614-292-7325
Email	cstewart@cse.ohio-state.edu
Name Displayed to Recommender	John Wu
Waiver	Do you wish to waive your right to examine this letter of recommendation? (Waiving your right means you will not have access to view the submitted letter of recommendation.)
Waiver Response	I waive my right to access this report.
Waiver Signature	John Wu
Recommendation Requested	11/30/2022
Recommendation Submitted	11/30/2022

Reference #3

Name	Dr. William Stewart
-------------	---------------------



Reference (continued)

Organization	Nationwide Childrens Hospital
Title	Former Faculty/ Assistant Professor of Pediatrics and Statistics
Relationship	PI
Phone	+1 614-355-6674
Email	minitether@gmail.com
Name Displayed to Recommender	John Wu
Waiver	Do you wish to waive your right to examine this letter of recommendation? (Waiving your right means you will not have access to view the submitted letter of recommendation.)
Waiver Response	I waive my right to access this report.
Waiver Signature	John Wu
Recommendation Requested	11/30/2022
Recommendation Submitted	Not Submitted



Acknowledgements

Form Title Acknowledgements

Have you ever been found responsible for a disciplinary violation at any educational institution you have attended from the 9th grade (or the international equivalent) forward, whether related to academic misconduct or behavioral misconduct, that resulted

No

Have you ever been adjudicated guilty or convicted of a misdemeanor, felony, or other crime? Note that you are not required to answer "yes" to this question, or provide an explanation, if the criminal adjudication or conviction has been expunged, sealed, a

No

Release Statement for Donor Notification

If I am selected for a fellowship, scholarship, travel grant, award, or prize, I authorize Purdue University to release my name, major and hometown to the donor(s) and confirm that all criteria for selection were met.

Yes

Publicity Release Statement

If I am selected for a fellowship, scholarship, travel grant, award, or prize, I authorize Purdue University to release personally identifiable information from my education record to official Purdue organizations as well as outside entities for scholarshi

Yes

Text Messaging

I am willing to receive important text messages from the Purdue

Yes



Acknowledgements (continued)

Graduate School

Confirmation

I have read and understood and acknowledge the above statements.



PURDUE
UNIVERSITY®

The Graduate School

Certification

Certification

Signature

John Wu

Date

12/11/2022

Official Academic Transcript from:
THE OHIO STATE UNIVERSITY
UNIVERSITY REGISTRAR
540 STUDENT ACADEMIC SVC BLDG
281 W LANE AVE
COLUMBUS, OH 43210



TELEPHONE: 614-292-9330

Official Academic Transcript of:

JOHN WU

Transcript Created: 7-Oct-2022

Document Type: THIRD-PARTY SECURE PDF

Intended Recipient:

JOHN WU

7160 SUMPTION DRIVE

NEW ALBANY, OH 43054-4003

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Name: John Wu
Student: 500399898
DOB: 10/08/****
Print Date: 10/07/2022
Page 1 of 2
STUOF-ISSUED TO STUDENT

JOHN WU
7160 SUMPTION DRIVE
NEW ALBANY OH 43054-4003

Course	Description	Attempted	Earned	Grade	Points
MATH	2568 Linear Algebra	3.00	3.00	B+	9.900

	GPA Hours	Earned	Points
Term GPA	3.300	3.00	9.900
Cum GPA	3.902	34.00	132.700

Institutions Attended

Kenyon College
New Albany High School

External Degrees

New Albany High School
High School Diploma May 25, 2019

Beginning of Undergraduate Record**Autumn 2019 Semester**

Program: Engineering
Plan: Biomedical Engineering Pre Major

Course	Description	Attempted	Earned	Grade	Points
CHEM	1910H Honors Gen Chem 1	5.00	5.00	A	20.000
ENGR	1100.15 Intro OSU/ENGR	1.00	1.00	A	4.000
ENGR	1281.01H Fund Engr Honors 1	5.00	5.00	A	20.000
MATH	1172 Eng Math A	5.00	5.00	A	20.000

Autumn 2020 Semester

Program: Engineering
Plan: Computer Science and Engineering Major
Subplan: Artificial Intelligence Option

Course	Description	Attempted	Earned	Grade	Points
CSE	2231 SW 2: Dev & Dsgn	4.00	4.00	A	16.000
CSE	2321 Fndns 1: Discr Str	3.00	3.00	A	12.000
ECE	2060 Int Digital Logic	3.00	3.00	A	12.000
PHILOS	2120 Asian Philosophies	3.00	3.00	PA	0.000
STAT	3470.01 Intro Stat Eng	3.00	3.00	A	12.000

A global health emergency resulted in changes to course delivery and academic policies, including expansion of Pass/Non-Pass grading options for the semester.

	GPA Hours	Earned	Points
Term GPA	4.000	16.00	52.000
Cum GPA	3.929	47.00	184.700

Transfer Credit from Kenyon College

Applied Toward Engineering

Course	Description	Attempted	Earned	Grade	Points
ENGLISH	1110.02 First-Yr Engl Comp	0.00	4.00	K	0.000
ENGLISH	2367.02 US Exper: Lit	0.00	4.00	K	0.000
POLITSC	GEN General	0.00	4.00	K	0.000
POLITSC	2400 Intro Polit Theory	0.00	4.00	K	0.000
Course Trans GPA:	0.000	Transfer Totals:	0.00	16.00	0.000

Test Credits Applied Toward Engineering

Course	Description	Attempted	Earned	Grade	Points
CHEM	1210 General Chem 1	0.00	5.00	EM	0.000
ECON	2001.01 Prin Microeconomic	0.00	3.00	EM	0.000
ENGLISH	1110.01 First-Yr Engl Comp	0.00	3.00	EM	0.000
HISTORY	1151 Amer Civ to 1877	0.00	3.00	EM	0.000
HISTORY	1152 Am Civ since 1877	0.00	3.00	EM	0.000
HISTORY	1212 W Civ: 17 C-Pres	0.00	3.00	EM	0.000
MATH	1151 Calculus 1	0.00	5.00	EM	0.000
MATH	1152 Calculus 2	0.00	5.00	EM	0.000
PHYSICS	1200 Mech, Fluids, Waves	0.00	5.00	EM	0.000
PSYCH	1100 Intro Psychology	0.00	3.00	EM	0.000
STAT	2450 Intro Stat Anl 1	0.00	3.00	EM	0.000
Test Trans GPA:	0.000	Transfer Totals:	0.00	41.00	0.000

	GPA Hours	Earned	Points
Term GPA	4.000	73.00	64.000
Cum GPA	4.000	16.00	73.00

Dean's List**Spring 2020 Semester**

Program: Engineering
Plan: Biomedical Engineering Pre Major

Course	Description	Attempted	Earned	Grade	Points
ARTEDUC	1600 Art & Mus Snc 1945	3.00	3.00	A	12.000
CSE	2221 SW 1: Components	4.00	4.00	A-	14.800
ENGR	1282.01H Fund Engr Honors 2	3.00	3.00	A	12.000
PHYSICS	1250 Mech, Energy, Thermo	5.00	5.00	A	20.000

A global health emergency resulted in changes to course delivery and academic policies, including expansion of Pass/Non-Pass grading options for the semester.

	GPA Hours	Earned	Points
Term GPA	3.920	15.00	58.800
Cum GPA	3.961	31.00	122.800

Dean's List**Summer 2020 Term**

Program: Engineering
Plan: Computer Science & Engineering Pre Major

Dean's List**Spring 2021 Semester**

Program: Engineering
Plan: Computer Science and Engineering Major
Subplan: Artificial Intelligence Option

Course	Description	Attempted	Earned	Grade	Points
CSE	2331 Fndns 2: DS & Alg	3.00	3.00	A	12.000
CSE	2421 Sys 1: Comput Org	4.00	4.00	A	16.000
CSE	2501 Socl Ethcl Issues	1.00	1.00	A	4.000
ECE	2020 Anlg Sys & Circuit	3.00	3.00	A	12.000
MATH	3345 Fdn Higher Math	3.00	3.00	A	12.000
PEDS	4998 Research Pediatric	1.00	1.00	S	0.000
SOCIOL	3302 Technlgy & Society	3.00	3.00	A	12.000

	GPA Hours	Earned	Points
Term GPA	4.000	17.00	68.000
Cum GPA	3.948	64.00	252.700

Dean's List**Autumn 2021 Semester**

Program: Engineering
Plan: Computer Science and Engineering Major
Subplan: Artificial Intelligence Option

Course	Description	Attempted	Earned	Grade	Points
CSE	2431 Sys 2: Oper Sys	3.00	3.00	A	12.000
CSE	3241 Intr Database Sys	3.00	3.00	A	12.000
CSE	3521 Intr Artif Intell	3.00	3.00	A	12.000
CSE	3901 Proj: Web Apps	4.00	4.00	A-	14.800
PEDS	4998 Research Pediatric	1.00	0.00	NG	0.000

	GPA Hours	Earned	Points
Term GPA	3.907	13.00	50.800
Cum GPA	3.941	77.00	303.500

Spring 2022 Semester

Program: Engineering
Plan: Computer Science and Engineering Major
Subplan: Artificial Intelligence Option

Course	Description	Attempted	Earned	Grade	Points
CSE	3341 Prin Prgrmg Langs	3.00	3.00	A	12.000
CSE	3461 Computer Netwrkng	3.00	3.00	A-	11.100
CSE	5526 Neural Networks	3.00	3.00	A	12.000
MATH	2415 ODE and PDE	3.00	3.00	A	12.000

THE OHIO STATE UNIVERSITY TRANSCRIPT

Adrienne Bricker
Adrienne Bricker
University Registrar



Name: John Wu
Student: 500399898
DOB: 10/08/****
Print Date: 10/07/2022
Page 2 of 2
STUOF-ISSUED TO STUDENT

PEDS	4998	Research Pediatric	1.00	1.00	S	0.000
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			<u>GPA Hours</u>	<u>Earned</u>	<u>Points</u>
Term GPA	3.925	Term Totals	12.00	13.00	47.100
Cum GPA	3.939	Cum Totals	89.00	151.00	350.600

Dean's List**Summer 2022 Term**

Program: Engineering
Plan: Computer Science and Engineering Major
Subplan: Artificial Intelligence Option

<u>Course</u>	<u>Description</u>	<u>Attempted</u>	<u>Earned</u>	<u>Grade</u>	<u>Points</u>
PEDS	4998 Research Pediatric	1.00	1.00	S	0.000

			<u>GPA Hours</u>	<u>Earned</u>	<u>Points</u>
Term GPA	0.000	Term Totals	0.00	1.00	0.000
Cum GPA	3.939	Cum Totals	89.00	152.00	350.600

Autumn 2022 Semester

Program: Engineering
Plan: Computer Science and Engineering Major
Subplan: Artificial Intelligence Option

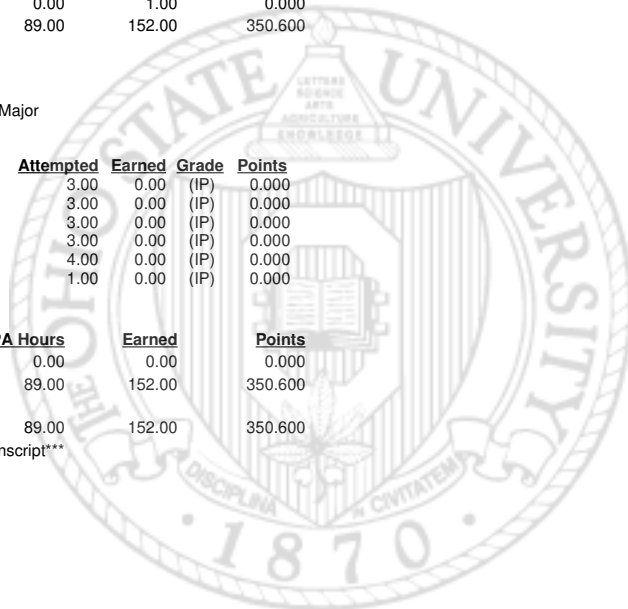
<u>Course</u>	<u>Description</u>	<u>Attempted</u>	<u>Earned</u>	<u>Grade</u>	<u>Points</u>
CSE	4999H HonUG Research CSE	3.00	0.00	(IP)	0.000
CSE	5523 Machine Learning	3.00	0.00	(IP)	0.000
CSE	5524 Computer Vision	3.00	0.00	(IP)	0.000
CSE	5525 Spch & Lang Proc	3.00	0.00	(IP)	0.000
CSE	5914 Cpstr: Knowl Sys	4.00	0.00	(IP)	0.000
PEDS	4998 Research Pediatric	1.00	0.00	(IP)	0.000

			<u>GPA Hours</u>	<u>Earned</u>	<u>Points</u>
Term GPA	0.000	Term Totals	0.00	0.00	0.000
Cum GPA	3.939	Cum Totals	89.00	152.00	350.600

Undergraduate Career Totals

Cum GPA:	3.939	Cum Totals	89.00	152.00	350.600
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End of Undergraduate Transcript





OFFICE OF THE UNIVERSITY REGISTRAR
STUDENT ACADEMIC SERVICES BUILDING, 5TH FLOOR
281 WEST LANE AVENUE
COLUMBUS, OH 43210-1132
TELEPHONE: 614-292-9330
EMAIL: REGISTRAR@OSU.EDU

TRANSCRIPT KEY**RELEASE OF INFORMATION**

This transcript cannot be released to another person, agency or organization except to officials internal to your own organization or agency who have a reasonable business use for the information. Release to other parties requires written consent of the student.

ACCREDITATION

The Ohio State University (Columbus, Lima, Mansfield, Marion, Newark and the Agricultural Technical Institute, Wooster, Ohio) is accredited by the Higher Learning Commission as a degree-granting institution at the associate, baccalaureate, masters, professional and doctoral levels.

DETAILED TRANSCRIPT KEY

For a more detailed version of this transcript key including information on good standing, probation, dismissal and the definition of enrollment status, please visit <https://registrar.osu.edu/alumni/transcriptkey.asp>

GRADING SYSTEM

A	• Excellent.....	4.0 Pts	I	• Incomplete.....	0 Pts
A-	• Excellent.....	3.7 Pts	IP	• In Progress.....	0 Pts
B+	• Above Average.....	3.3 Pts	IX	• Extension of Incomplete.....	0 Pts
B	• Above Average.....	3.0 Pts	P	• Progress.....	0 Pts
B-	• Above Average.....	2.7 Pts	PA	• Pass.....	0 Pts
C+	• Average.....	2.3 Pts	PE	• Emergency Pass.....	0 Pts
C	• Average.....	2.0 Pts	NP	• Non-pass.....	0 Pts
C-	• Average.....	1.7 Pts	R	• Registered to Audit.....	0 Pts
D+	• Poor.....	1.3 Pts	S	• Satisfactory.....	0 Pts
D	• Poor.....	1.0 Pts	U	• Unsatisfactory.....	0 Pts
E	• Failure.....	0 Pts	W	• Withdrew.....	0 Pts
EM	• Examination Credit.....	0 Pts	NG	• Grade unreported by instructor.....	0 Pts
EN	• Failure-Non Attendance.....	0 Pts	NEN	• EN grade for PA/NP course.....	0 Pts
K	• Transferred Credit.....	0 Pts	UEN	• EN grade for S/U course.....	0 Pts

notation denotes a course involved in the forgiveness or substitution of grades - see Recalculation of Grades

SPECIAL COURSE NUMBER NOTATIONS

E suffix	Honors embedded course
H suffix	Honors course or honors version of a course
S suffix	Service Learning course
T suffix	Technical course (part of a two year technical program)

RECALCULATION OF GRADES

FORGIVENESS OR SUBSTITUTION OF GRADES: Students may petition their enrollment unit to repeat a course, and after completing the course the second time, have the original course credit and grade excluded from the calculation of the student's cumulative point-hour ratio, but remain on the student's official permanent record. The course or courses being substituted or repeated will bear the symbol "#" to the left of the grade.

PERMITTED TO RESTART GPA or FRESH START: An undergraduate student who enrolls in the university after an absence of five or more years may petition to have their GPA recalculated. If the petition is approved, the student resumes their academic program with no cumulative GPA. All courses taken will remain on the permanent record.

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CALENDAR

- The semester system replaced the quarter system for the university in summer 2012
- The semester system replaced the quarter system for the College of Law in autumn 1984

UNIVERSITY CLASS RANKING SYSTEM

Student rank in all undergraduate colleges is based on total credit hours completed and recorded. Graduate students are not ranked. Professional students are ranked according to progress within their curriculum.

Semester Calendar			Quarter Calendar		
Rank	Earned Hours		Rank	Earned Hours	
Freshman	0	through 29	Freshman	0	through 44
Sophomore	30	through 59	Sophomore	45	through 89
Junior	60	through 89	Junior	90	through 134
Senior	90	and up	Senior	135	and up

COURSE NUMBERING SYSTEM**SEMESTER CALENDAR**

1000-1099	UG (Undergraduate) - Non Credit Courses Non-credit courses for orientation, remedial, or other non-college-level experiences. These are courses in addition to a program's graduation requirements.
1100-1999	UG - Introductory Level Undergraduate Courses Basic courses providing undergraduate credit, but not to be counted toward major or field of specialization in any department. Courses at this level are beginning courses, required or elective courses that may be a prerequisite to other courses.
2000-2999	UG - Intermediate Level Undergraduate Courses Intermediate courses providing undergraduate credit and may be counted toward a major or field of specialization.
3000-3999	UG - Upper Level Undergraduate Courses Upper Level courses providing undergraduate credit that may be counted toward a major or field of specialization.
4000-4999	UG - Advanced Level Undergraduate Courses Advanced Level courses providing undergraduate credit that may be counted toward a major or field of specialization. Graduate students may enroll in and receive graduate credit for 4000-level courses outside their own graduate program.
5000-5999	UG and G (Graduate) - Dual Career Level Courses Courses that are regularly offered for both graduate credit and undergraduate credit. Advanced Level courses providing undergraduate credit that may be counted toward a major or field of specialization. Foundational coursework and research providing graduate or professional credit.
6000-6999	G - Foundational Level Graduate and Professional Courses Foundational courses and research providing graduate or professional credit.
7000-7999	G - Intermediate Level Graduate and Professional Courses Intermediate courses and research providing graduate or professional credit.
8000-8999	G - Advanced Level Graduate and Professional Courses Advanced courses and research providing graduate or professional credit.

Quarter Calendar

000-099	Non-Credit Courses (except certain seminars and colloquia) for orientation, remedial, or other non-college-level experiences. Credit is not applicable to Graduation Requirements.
100-199	Basic Courses providing undergraduate Credit but not to be counted on a major or field of specialization in any department. Beginning Courses, Required, or Elective Courses that may be prerequisite to other courses.
200-299	Basic Courses providing Undergraduate Credit and may be counted on a major or field of specialization.
300-499	Intermediate Courses providing Undergraduate Credit or Basic Professional Credit that may be counted on a major or field of specialization.
500-599	Intermediate Courses providing Undergraduate or Professional Credit that may be counted on a major or field of specialization and may provide Graduate Credit only in other departments.
600-699	Courses providing Undergraduate or Professional Credit that may be counted on a major or field of specialization, and may provide Graduate Credit (in all departments).
700-799	Advanced Courses providing Undergraduate, Graduate, or Professional Credit.
800-999	Courses providing Graduate Credit and are open to undergraduates only with the approval of the Vice Provost for Research and Dean of the Graduate School.

He was my best friend and my bully, my confidant and my rival. My older brother suffered a stroke in his first year of college, paralyzing the left side of his body. Watching him in recovery for 6 months, I knew he would never fully use his left hand again. Yet this injury that would typically have hindered his engineering studies was instead overcome through the application of years of artificial intelligence research; namely, a speech-to-text app. Today, my brother is a medical student finishing his dissertation. Seeing how new natural language processing technologies alleviated aspects of his physical ailments was awe-inspiring, and I embraced my acceptance to the engineering program at the Ohio State University in hopes of researching and one day building new technologies that would help others like my brother. Over the past four years, I have had the pleasure of undertaking interesting projects and working in both a mathematical immunology and computer systems lab. These experiences were eye-opening and fulfilling, and have reinforced my passion for research and my commitment to pursuing a PhD in machine learning.

My journey into open-ended problems began in freshman year with the Honors Engineering Robotics competition. Despite minimal prior experience in hardware and software design, my team was tasked with building a robot to precisely navigate an obstacle course and complete complex motor tasks. In the process, I learned to write bills of materials, plan design schedules, and embrace the software challenges of programming a robot. While the technical knowledge I gained was valuable, I was surprised to find the social aspects of the work just as meaningful. Learning to collaborate effectively with my peers taught me the importance of communication and flexibility when working as a team. To balance everyone's outside time commitments and rigorous coursework meant building flexible schedules that still met deadlines, and addressing the technical needs of the project while being sensitive to everyone's personal needs required compassion and tact in managing group messages and communication. Through this process, I realized that it was not only the technical skills of each individual on our team that drove our progress, but also and perhaps more importantly, our collaboration. Though the final Robotics competition was canceled due to the onset of the Covid-19 pandemic, I still finished the work with a deep sense of fulfillment: We fully constructed and programmed our robot to complete the obstacle course and accomplish all bonus objectives, meaning I got to both challenge myself and tackle open-ended problems with teammates who became friends.

With this newfound drive, I started my first research experience in Dr. Jayajit Das' lab within the Battelle Center for Mathematical Medicine. One method for understanding biological systems is building mechanistic models of cellular processes through systems of differential equations that contain any number of unknown parameters. During my time in Dr. Das' lab, I developed parameter estimation software for single-cell models. Parameter estimation of single-cell data is a challenging problem as data is often noisy and protein abundances can vary on many orders of magnitude. Initially, we started analyzing simulated noisy time snapshot data using a set of known parameters but later applied our method to immunological systems, specifically single-cell CD8⁺ T cell data. Through optimizing a cost function derived from the generalized method of moments with particle swarm optimization, we reproduced tight and

unbiased confidence intervals around model parameters embedded in differential equations fitting the means and variances of experimental data. Based on this work, we submitted a manuscript that is currently under review in PLOS Computational Biology, and a software paper to BMC Bioinformatics. In the process, I furthered my understanding of various statistical and computational techniques, especially ones related to optimization. Working with biophysicists every day has shown me that computational research is valuable not only for augmenting the lives of others through its applications but also can explain biological processes that may one day provide insights on how to better treat diseases that affect those like my brother.

For my ongoing honors senior thesis, I am exploring the idea of a model-data commons with Dr. Christopher Stewart's ReRout lab. Working with another undergraduate student, we benchmarked vision models and optimization heuristics such as Particle Swarm Optimization against multiple datasets, showing that relative model performance can be heavily data dependent. Thus far, we have submitted two research papers, one on arXiv, which aims to justify the need for metadata on model performance, and one recently accepted by the AAAI-23 conference, exploring the relationship between conventional benchmarking datasets and digital agriculture. We hope to continue exploring many other machine learning-related questions during my last year at Ohio State, especially ones related to cancer modeling.

My time in Dr. Das' cancer research lab and Dr. Stewart's ReRout lab has furthered my interest in machine learning model interpretability and robustness, especially around its interdisciplinary application to the physical sciences. As datasets drastically increase in dimension, as seen with the recent development of Image Mass Cytometry datasets, conventional mechanistic modeling techniques may not fully discern the complex relationships embedded within them. On the other hand, machine learning techniques are well-suited for discovering high dimensional patterns within datasets, but often due to their "black box" nature and reliance on clean data, fail to provide the interpretability needed for scientific progress. The Computer Science doctoral program at Purdue University would allow me to pursue this interest at the highest level. Specifically, I would love to work with Dr. Raymond Yeh and his vast array of experience working in numerous domains, but especially his recent work in GeoCode where he leveraged deep learning to produce human-interpretable parameters for editing 3D shapes. I would also be honored to work with Dr. Rajiv Khanna, and his work in interpretable machine learning such as using fisher kernels to interpret black box predictions.

In addition to my research interests, my experiences as a teaching assistant and an undergraduate ambassador for high school STEM outreach efforts have instilled a desire to pursue further opportunities in mentorship. As the famous physicist Richard Feynman shared, "If you cannot explain something in simple terms, you don't understand it." Breaking down complex coding concepts into digestible chunks for first-time coders was not only emotionally fulfilling but also refined my basic coding skills. Similarly, presenting the amazing applications of machine learning research in front of high schoolers and seeing their eyes light up has reinforced my desire to pursue a PhD. After graduate school, I hope to one day mentor others while pursuing research in an academic setting toward professorship.

Diversity Statement

As a Chinese American who's seen his parents struggle to be understood and heard, I saw the injustice language barriers posed in minimizing an individual's ideas, voice, and consequently identity. Fortunately, for me as an American born citizen, English came naturally to me, and I had the privilege of living my life without directly experiencing these obstacles. However, through my work as a teaching assistant and my time as a fellow classmate at Ohio State University, I came to work with many international Chinese students who had immigrated to this country just as my parents had. I was struck by how such academically gifted students often underperformed in their coursework because of both misunderstandings over project instructions and inability to formulate and ask clarification questions. I was incredibly frustrated at how these barriers again minimized individuals and their ability to demonstrate academic aptitude. Not wanting to stand by helplessly, I worked with my students and classmates by listening to their concerns and questions voiced in Mandarin, provided clarification to the English instructions by parsing through nuances of commonly used grammar structures, and most of all facilitated their independence by helping them learn to structure their own questions. Through my work, I developed a strong passion to help individuals get to where they deserve to be based on merit and not superficial barriers, which I hope to continue during my time in graduate school.

John Wu

[GitHub](#) | jhnwu3@gmail.com | (614) 638-7981 | [Linkedin](#)

EDUCATION

The Ohio State University, Honors Program
Bachelor of Science in Computer Science and Engineering
GPA: 3.939

Columbus, OH
May 2023

Thesis: Optimization for Explainable Modeling (Ongoing)

SPECIALIZED COURSEWORK:

- Quantitative Biology, Deep Learning, Algorithms, Honors Engineering Robotics Course, Computer Vision, Natural Language Processing, Machine Learning Statistics

RESEARCH EXPERIENCE

Das Lab, Steve and Cindy Rasmussen Institute for Genomic Medicine
Principal Investigator, Jayajit Das, PhD

Columbus, OH
February 2021-Present

Research Assistant

- Develop parameter estimation software BioNetGMMFit in C/C++ for rule based and mechanistic modeling.
- Utilize parallel programming to improve particle swarm optimization performance up to a factor of 10x.
- Analyze mass cytometry datasets, generating parameter estimates through generalized method of moments.
- Train a convolutional neural network to attempt to analyze an image mass cytometry dataset of breast cancer.
- Use deep learning library, deepXDE, for parameter estimation of PDE models.

Rerout Lab, Department of Computer Science, The Ohio State University
Principal Investigator, Christopher Stewart, PhD

Columbus, OH
May 2022-Present

Research Assistant

- Build prototype docker containerization infrastructure for model commons project, allowing for ease of Python code shareability.
- Benchmark different particle swarm optimization configurations, contributing to a model benchmarking paper for model commons.
- Collaborate and communicate plans and necessary data to write benchmarking paper.

TECHNICAL SKILLS

Languages: C/C++, Python, Java, MATLAB, R, Javascript, CSS, HTML, Ruby

Tools and Frameworks: Flask, Ruby on Rails, Excel, Microcontrollers, Docker, Elastic, SQL, OpenMP, PyTorch

PUBLICATIONS

John Wu, William CL Stewart, Ciriya Jayaprakash, and Jayajit Das, "Generalized Method of Moments Improves Parameter Estimation in Biochemical Signaling Models of Time-Stamped Single-Cell Snapshot Data." *BioRxiv*, Preprint, 1 Jan. 2022, <https://www.biorxiv.org/content/10.1101/2022.03.17.484491v1>. (Under review in PLOS Computational Biology)

John Wu, William CL Stewart, Ciriya Jayaprakash, and Jayajit Das, 'BioNetGMMFit: A Parameter Estimation Tool for BioNetGen Using Single-Cell Snapshot Data from Cell Populations Evolving over Time'. *BioRxiv*, Cold Spring Harbor Laboratory, 2022, <https://doi.org/10.1101/2022.12.08.519526>. (Submitted to BMC Bioinformatics)

Seth Ockerman, **John Wu**, Zichen Zhang, et al. (2023). "A Reflection on AI Model Selection for Digital Agriculture Image Datasets". (To appear in the 37th Association for the Advancement of Artificial Intelligence Conference (AAAI-23))

Seth Ockerman, **John Wu**, Christopher Stewart, "A Case for Dataset Specific Profiling." *aRxiv*, Preprint, 1 Aug. 2022, <https://arxiv.org/abs/2208.03315>. (In Progress)

CONFERENCE PRESENTATIONS

John Wu, Abigail Wexner Research Institute Research Retreat, Columbus, Ohio, United States, November 2022

Generalized Method of Moments improves parameter estimation in biochemical signaling models of time-stamped single-cell snapshot data

John Wu, qBio Conference, Fort Collins, Colorado, United States, June 2022

Generalized Method of Moments improves parameter estimation in biochemical signaling models of time-stamped single-cell snapshot data

TEACHING EXPERIENCE

College of Engineering, The Ohio State University

Columbus, OH

Teaching Assistant, Department of Computer Science

Autumn 2021

- Assisted with instruction of Introduction to C++ course to class size of 40 students.
- Tutored freshman engineering students in office hours.
- Graded labs and coding assignments, giving constructive feedback.

Summer Experience Columbus Academy

Gahanna, OH

Counselor

Summer 2019

- Facilitated group activities for students, ranging from kindergarten to 9th grade.
- Taught children to regulate and manage their emotions through breathing exercises.

INDUSTRY EXPERIENCE

Converge Technologies

Hilliard, OH

Software Intern

Summer 2020

- Developed Selective Harmonic Elimination Pulse Width Modulation firmware for lab-grade industrial coolers, improving power efficiency.
- Programmed microcontrollers' interrupt vectors to setup failsafes in case of power failures.
- Assisted in pre-prototyping research, devising early plans for prototype design and bills of materials.
- Tested analog-digital camera sensors, ensuring functionality and quality standards.

UNIVERSITY SERVICE

Hometown Ambassadors, The Ohio State University

Columbus, OH

Participant

Autumn 2021

- Presented OSU's engineering program during STEM Outreach activities for high school students.
- Shared personal experiences in engineering with students and answered specific questions about the program.

HONORS & AWARDS

Abstract of Distinction, Abigail Wexner Research Institute Research Retreat 2022

Best of Student Startups Finalist, Keenan Center for Entrepreneurship 2022

Maximus Scholarship, The Ohio State University 2019-2022

Dean's List, The Ohio State University 2019-2022

Computer Science Course History

A solid background in the areas below is important to succeed in our graduate program. Please enter the college and university level courses that you have taken, are taking currently, or that you plan to take before entering this department in the areas listed below.

CS: Compilers / Programming Languages			
Course Title - CSE 3341 – Principles of Programming Languages	Textbook - Programming language pragmatics		
Institution – The Ohio State University	Semester SP22	Grade A	Credit 3.00
Course Title – CSE 2421: Systems 1: Introduction to Low-Level Programming and Computer Organization	Textbook Computer Systems: A Programmer's Perspective by Bryant and O'Hallaron 2 nd ed		
Institution– The Ohio State University	Semester SP21	Grade A	Credit 4.00
Course Title	Textbook		
Institution	Semester	Grade	Credit

CS: Data Structures & Algorithms			
Course Title – CSE 2321, Foundations 1: Discrete Structures	Textbook "Introduction to Algorithms," Third Edition, by Corman, Leiserson, Rivest and Stein		
Institution– The Ohio State University	Semester AU20	Grade A	Credit 3.00
Course Title – CSE 2331, Foundations 2: Data Structures and Algorithms	Textbook - "Introduction to Algorithms," Third Edition, by Corman, Leiserson, Rivest and Stein		
Institution– The Ohio State University	Semester SP21	Grade A	Credit 3.00
Course Title	Textbook		
Institution	Semester	Grade	Credit

CS: OS / Networking / Distributed Systems			
Course Title - CSE 2431 Operating Systems	Textbook <i>Operating System Concepts</i> by Abraham Silberschatz, Peter B. Galvin, and Greg Gagne, 10th ed., Wiley, 2018 (Notation: [OSC]). (The 8th and 9th editions are fine too.)		
Institution– The Ohio State University	Semester AU21	Grade A	Credit 3.00
Course Title - CSE 3461 – Computer Networking	Textbook James E. Kurose and Keith W. Ross, <i>Computer Networking: A Top-Down Approach</i> , Seventh Edition, Addison Wesley. (The sixth or		
Institution– The Ohio State University	Semester SP22	Grade A-	Credit 3.00
	Textbook		
Institution– The Ohio State University	Semester	Grade	Credit