Swagat Bhattacharyya

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Education

1.1 Schooling

Sophomore, **Purdue University**, 610 Purdue Mall, West Lafayette, IN 47907	GPA: 4.00/4
Graduate, **Morgantown High School**, 109 Wilson Ave, Morgantown, WV 26501	GPA: 4.42(**W**)/4
Graduate, **Suncrest Middle School**, 360 Baldwin St, Morgantown, WV 26505	GPA: 4.00/4
Graduate, **North Elementary School**, 825 Chestnut Ridge Rd, Morgantown, WV 26505	GPA: –/–
Student, **Lawrence Avenue Elementary School**, 29 Leroy St, Potsdam, NY 13676	GPA: –/–
Student, **Sweet Angels School**, 162/5 Andul Rd, Howrah, West Bengal 711103	GPA: –/–
Student, **Barauni D.A.V. Public School**, BRTS, Refinery Twp, Begusarai, Bihar 851117	GPA: –/–

1.2 Standardized Test Scores

SAT (2017)	Composite: 1550
	Mathematics: 780
	Reading & Writing: 770
	Chemistry Subject Test: 800
	Physics Subject Test: 800

AP Biology (2018)	5
AP Physics C: Electricity and Magnetism (2018)	5
AP United States History (2018)	5
AP Calculus BC (2017)	5
AP English Language and Composition (2017)	3
AP Physics 2 (2017)	5
AP Physics C: Mechanics (2017)	5
AP Psychology (2017)	5
AP United States Government and Politics (2017)	5
AP Calculus AB (2016)	5
AP Chemistry (2016)	5
AP Environmental Science (2016)	5
AP Human Geography (2016)	5
AP Physics 1 (2016)	5
AP World History (2015)	5

1.3 Full Transcript

1.3.1 Undergraduate

Year 2 (Sophomore)

Fall				Spring			
No.	Title	Cr.	Grade	No.	Title	Cr.	Grade
ECE 200	Elec & Comptr Engr Seminar	0	S	HONR 399	The Nuclear Age	3	NA
ECE 20007	Elec Engr Fundamentals I Lab	1	A	ECE 20008	Elec Engr Fundamentals II Lab	1	NA
ECE 20001	Elec Engr Fundamentals I	3	A+	ECE 20002	Elec Engr Fundamentals II	3	NA
ECE 270	Intro Digital Sys Design	4	A+	MA 353	Linear Algebra II	3	NA
MA 425	Elem Complex Analysis	3	A	MA 375	Intro Discrete Math	3	NA
PHYS 340	Modern Physics Lab	3	A+	PHYS 422	Waves & Oscillations	3	NA
Phys 344	Modern Physics	3	A+				

Year 1 (Freshman)

Fall				Spring			
No.	Title	Cr.	Grade	No.	Title	Cr.	Grade
ENGR 161	Honors Intro To Phys & Engr I	4	A	ENGR 16200	Honors Intro To Phys & Engr II	4	A
HONR 19901	The Evolution Of Ideas	1	A	HONR 19902	The Evolution Of Ideas II	1	A
JPNS 101	Japanese Level I	4	A+	JPNS 102	Japanese Level II	4	A+
MA 266	Ordinary Differ Eqn	3	A+	MA 362	Topics Vector Calculus	3	A+
SCLA 101	Crit Think & Com I	3	A	COM 217	Science Writing & Presentation	3	A
				STAT 51100	Intro Statistical Methods	3	A

Transfer from WVU and Credit By Exam

No.	Title	Cr.	Grade
MA 265	Multivariate Calculus	4	A
MA 441	Applied Linear Algebra	3	A+
CS 159	Programming Applications For Engineers	3	S

1.3.2 High School

Year 4 (Senior)

Title	Grade I	Grade II
AP Eng Lit	A	A
AP Biology	A	A
AP US Hist	A	A
Orchestra 4	A	A
Pre-engineering	A	A

Year 3 (Junior)

Title	Grade I	Grade II
AP Eng Lang	A	A
AP Calc BC	A	A
AP Physics C: Mech	A	A
AP US Gov	A	A
AP Physics 2	A	A
German III	A	A
Orchestra 3	A	A
Teach Aide	A	A

Year 2 (Sophomore)

Title	Grade I	Grade II
Eng LA 10H	A	A
AP Calc AB	A	A
AP Chem	A	A
AP Hum Geo	A	A
Health HSH	A	A
German II	A	A
AP Physics 1	A	A

Year 1 (Freshman)

Title	Grade I	Grade II
Eng LA 9H	A	A
AP Wld Hist	A	A
Phys Ed HS	A	A
Orchestra 1	A	A
German I	A	A
Chemistry H	A	A
Pre Calc H	A	A
Bio H	A	A

Middle School Transfer and Credit By Exam

Title	Grade I	Grade II
Algebra I	A	A
Geometry	A	A
Phys Sci	A	A
Algebra II	A	A

Work Experience

2.1 Research

Current
June, 2014
Student Researcher; CES Lab, Lane Department of CSEE, WVU, Morgantown, WV 26506
Developed one of the first successful remote training algorithms for a low-power field programmable analog array (FPAA) based vehicle detector and classifier. Coauthored a journal paper based on this work. Designed and fabricated an IC containing a novel, low-power analog-digital converter.

July, 2014
Summer Researcher; NRAO, Green Bank, WV 24944
Gathered spectroscopy data pertaining to the hydroxyl radical (OH) from several stellar objects. Analyzed this data using information theoretic criteria and coauthored two journal papers, one of which received the 2016 National Young Astronomer Award.

2.2 Teaching and Tutoring

2016-2017
Teacher's Assistant for AP Chemistry
TA for two semesters at MHS – supervised labs, tutored students, and prepared standard solutions.

2014-2016
Volunteer Mentor
Mentor/trainer for the Suncrest Middle School Science Bowl team.

2011-2014
Teacher's Assistant for the General Sciences
Offered homework help during advisory periods at Suncrest Middle School.

2012-2013
Volunteer Afterschool Tutor
Offered afterschool homework help at Suncrest Middle School.

2.3 Leadership

2019-2020
IEEE Purdue University Student Branch Vice President
Advised IEEE technical committees, maintained the general IEEE website, organized a few club events, and oversaw the safety of the IEEE workspace.

2019-2020
IEEE Engineering in Medicine and Biology Society Electrical Lead
While the electrical lead, supervised a project to make a tremor stabilizing glove for Parkinson's Disease patients and helped host two prosthetic workshops.

2016-2018
MHS Physics Club Co-founder and Joint Head
The MHS Physics Club is a society for students interested in physics to spread awareness and those struggling with concepts to get help from others with more expertise.

Publications

Non-Refereed Journal	Senthilvelan J, **Bhattacharyya S**, Tanner D, Crites S, "Detection of the Interstellar Molecule OH in W3, W49, and Cassiopeia A using the 40-ft Telescope and the GBT", *Radio Astronomy, 21-28*, July-August, 2015
Under Preparation 1.	**Bhattacharyya S**, Senthilvelan J, Tanner D, Crites S, Coots T, "Detection of Interstellar Molecule OH in W3, W49, Cassiopeia A, K350, W75s, and NGC 7538 Using the 40-ft Telescope and the GBT"
2.	**Bhattacharyya S**, Andryzcik S, Graham D, "An Acoustic Vehicle Detector and Classifier Using a Reconfigurable Analog/Mixed-Signal Platform"
3.	**Bhattacharyya S**, Abulaiha H, Graham D, "DIMOS: A Low-Power, Fast Response Logic Gate Architecture"

Talks

Invited	Senthilvelan J, **Bhattacharyya S**, Tanner D, Crites S, Coots T, "Detection of Interstellar Molecule OH in W3, W49, Cassiopeia A, K350, W75s, and NGC 7538 Using the 40-ft Telescope and the GBT", ALCon 2016, Washington, DC, August 10-13, 2016
Contributed	Senthilvelan J, **Bhattacharyya S**, Tanner D, Crites S, "Detection of the Interstellar Molecule OH in W3, W49, and Cassiopeia A using the 40-ft Telescope and the GBT", SARA Conference, Green Bank, WV, June 21-24, 2015

Posters

1. **Bhattacharyya S**, "DIMOS: A Low-Power, Fast Response Logic Gate Architecture," Intel ISEF 2018, Pittsburgh, PA, May 13-18, 2018
2. **Bhattacharyya S**, "DIMOS: A Low-Power, Fast Response Logic Gate Architecture," WVSSEF 2018, Fairmont, WV, April 7, 2018
3. Yan M, **Bhattacharyya S**, "myCAST: A Personalized Stroke Identification and Prevention System," Intel ISEF 2017, Los Angeles, CA, May 14-19, 2017
4. Yan M, **Bhattacharyya S**, "myCAST: A Personalized Cerebrovascular Accident Self-Test," WVSSEF 2017, Fairmont, WV, April 1, 2017

Select Honors and Awards [Key: Team → †, Solo → §]

6.1 International

2018 §	2nd place in the category of Embedded Systems and 1st place NSA research directorate award in the category of Material Science at Intel ISEF – honored with an asteroid in my name
2017 §	67th place (globally) in the AAPT Physics Bowl (Sen. Div.)

6.2 National

2018 §	Selected as one of two West Virginia delegates to the National Youth Science Camp – had the honor of introducing Ms. Kathleen Kingscott at a luncheon at the Senate
2018 §	Selected as a USA Physics Olympiad (USAPhO) semifinalist
20(18,17) †	Top 200 in Moody's Mega Math Challenge
2018 §	Physics Photo Contest Finalist: Photo featured on the 2018-19 American Assoc. of Physics Teachers (AAPT) calendar
2017 §	National Advanced Placement Scholar
2017 §	Bronze Medal, USA Physics Olympiad (USAPhO)
2017 §	Selected as a West Virginia delegate at the 2017 Presidential Inauguration Youth Leadership Congress
2016 †	1st place at the National Young Astronomer Awards – Featured in Reflector Magazine Vol. 69, No. 2, pg. 20; Reflector Magazine Vol. 68, No. 4, pg. 23; and online on the Sky & Telescope website
2015 §	16th place in Region 4 of the Alpha Division of the Log 1 Competition
2016 §	2nd place in Region 7 of the AAPT Physics Bowl (Jun. Div.)
20(14,13) †	18th and 5th place, respectively at the DOE National Science Bowl
2012 †	3rd place in "World Events" at AGLOA National Academic Games

6.3 State

2018 § 1st (overall) and 1st (engineering, physics, and chemistry) place at the WVSSEF – WV delegate to Intel ISEF
20(18,17,16) † 2nd, 1st, and 2nd place, respectively in the WV Regional High School Science Bowl competition
20(18,17,16,15) § 2nd (tie), 1st (tie), 2nd, and 1st place, respectively in the N. WV Chemistry Olympiad (Sen., Sen., Sen., and Jun. Div., respectively)
2017 † 2nd (overall) and 1st (computer science) place at the WVSSEF – Yale Science and Engineering Association, inc. Award for the "most outstanding exhibit in computer science, engineering, physics, or chemistry" and Mu Alpha Theta Award for the "most challenging, original, thorough, and creative investigation of a problem involving mathematics accessible to a high school student" – WV delegate to Intel ISEF
2017 § Featured on the American Computer Science League sample solutions page*
20(17,15) † Member of WV Junior Honor Ensemble
20(16,15) § 2nd place in Level 2 and Level 1, respectively of the AATG National German Exam in N. WV and W. PA
2015 § Promoted to 2nd degree black belt in Taekwondo*
2014 § Selected for the WV Governor's School for Math and Science
20(14,13) † 1st and 1sd place, respectively in the WV Regional Middle School Science Bowl competition
2014 † 1st place at the WV MATHCOUNTS competition
2014 § 9th place at the WV MATHCOUNTS competition
2014 † 2nd place at the WV Future Problem Solving packet writing competition
2013 † 1st place in "skits" and 2nd place in "packet writing" at the WV Future Problem Solving Competition
2013 † 3rd place in the WV FIRST LEGO League championship tournament

6.4 County

2017 § Honorable mention at the Monongalia County Young Writers' competition
20(17,15,14) § 7th, 9th, and 5th place, respectively in the Monongalia County Math Field Day (Sen., Sen., and Jun. Div., respectively)
2014 § Overall top scorer at the Monongalia County Academic Games Tournament
20(14,13) § Top 10 at the Monongalia County Spelling Bee
2012 § Top scorer in "Equations" at the Monongalia County Academic Games Tournament

6.5 School

2019 § Dean's list for both semesters in the 2018-2019 school year
2019 § 1st place in the Annual Purdue JSA Japanese Speech and Skit Competition (1st year)
2018 § Selected as a Purdue University Trustees Scholar
2018 § Recipient of community service diploma seal
20(13,12) § 3rd place at Suncrest Middle School Talent Show

Community Service

2016-2017 Volunteer in the Suncrest Middle School "Summer Science Stemaddicts" STEM promotion camp
2015 Volunteer with WVU STEM Extension at the State 4-H Convention and the STEM Fair for Chinese students – assisted with robotics and other related activities
2014-2016 Volunteer assistant trainer/mentor for the Suncrest Middle School Science Bowl team
Dec. 2014 Taught a microscopy and elementary cellular biology class in a rural village (Rampur [Howrah], WB, India)

Affiliations

- MHS Physics Club
- MHS Tennis Club
- MHS Code 4 Charity
- Astronomical League
- MHS Mu Alpha Theta
- MHS Science Honorary Society
- The Society of Amateur Radio Astronomers
- MHS German Honorary Society
- Purdue IEEE Student Branch

Additional Skills

Language	Music	Sports	Professional Tools
- English	- Violin performance	- Tennis	- MATLAB©
- Bengali language (Mother tongue)	- Indian classical singing	- Taekwondo	- Cadence Virtuoso©
- Hindi (Advanced conversational)	- Bamboo flute	- Soccer	- LaTeX
- German (Intermediate level)		- Volleyball	- LTspice©
- Japanese (Intermediate level)		- Skateboarding	- ANSI C
		- Rock climbing	- Arduino
			- Python
			- HTML
			- PHP

*Judged as an honor of similar magnitude