

Brian S. Borowski, Ph.D., CAGO

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Summary: Meticulous software engineer currently pursuing my passion to teach computer science at the college level. I have been developing software for academia, industry, and personal projects for over 20 years. Applying my diverse background, I consistently aim to present a blend of theoretical and practical instruction and teach students how to teach themselves.

Education: **Stevens Institute of Technology**, Hoboken, NJ
Doctor of Philosophy in Computer Science, February 2011 (completed June 2010) GPA 4.0/4.0
Dissertation: *Application of Channel Estimation to Underwater Acoustic Communication*
Advisor: Dan Duchamp
Graduate Certificate in Distributed Systems, January 2008
Graduate Certificate in Computer Systems, May 2007

Stevens Institute of Technology, Hoboken, NJ
Master of Science in Computer Science, May 2004 GPA 4.0/4.0
Graduate Certificate in Database Systems, January 2005 (completed May 2004)

Seton Hall University, South Orange, NJ
Bachelor of Science in Computer Science, May 2001 GPA 4.0/4.0
Minor: Mathematics

Academic Experience: **Columbia University**, New York, NY
Lecturer in Discipline 07/22 – Present

- Teach undergraduate/graduate courses in computer science
- Serve on the Academic Committee to discuss and handle topics related to the undergraduate program in computer science
- Advise undergraduate students on their courses of study

Spring 2023: *Advanced Programming* (in Bash and C on Linux), COMS W3157, 2 sections
Fall 2022: *Data Structures in Java*, COMS W3134, 2 sections
Summer 2022: *From Algorithmic Thinking to Development* (in C/C++/Java/Python), COMS W4995, 1 section

Caldwell University, Caldwell, NJ
Associate Professor 01/22 – 07/22

- Taught undergraduate courses in computer science
- Revamped and improved the computer science curriculum, having introduced new courses to adapt to the ever-changing field
- Served as a member of the Honors Program Committee, having helped advanced students with their senior theses

Spring 2022: *Computer Programming II* (in Java), CS 196, 1 section
Design and Analysis of Algorithms (in C++), CS 302, 1 section
Programming Languages and Paradigms, CS 322, 1 section

Stevens Institute of Technology, Hoboken, NJ
Associate Chair of Undergraduate Education 08/17 – 07/21
Associate Director of Undergraduate Programs 07/15 – 08/17

- Scheduled all CS courses, graduate and undergraduate, with the registrar for fall, spring, and summer semesters
- Assigned assistants (TAs, CAs, graders) to faculty for both undergraduate and graduate courses
- Collected and archived all forms needed for ABET accreditation, including PCRs, SPADs, and ICEs, and wrote the annual report
- Served as the chapter advisor of the UPE (Upsilon Pi Epsilon) International Honor Society for the Computing and Information Disciplines
- Revised the academic catalog annually to accurately describe the most recent curriculum and policies of the computer science department
- Delivered presentations at various undergraduate events throughout the academic year

Associate Teaching Professor 08/19 – 07/21
Assistant Teaching Professor 08/14 – 08/19

- Taught undergraduate courses in computer science

- Taught precollege summer courses in coding, game development, app design, and data structures and algorithms
- Developed all new curricula and assignments for the courses where I was the lead instructor
- Served on the curriculum committee and “Teaching Circle” to promote excellence in the classroom
- Served as the advisor of the Computer Science Club on campus
- Advised undergraduate students on their courses of study

Summer 2021: *Systems Programming* (in Bash and C on Linux), CS 392, 1 section
Precollege summer program

Spring 2021: *Creative Problem Solving and Team Programming* (in C/C++/Java/Python), CS 370, 1 section
Algorithms (in C++), CS 385, 1 section
Systems Programming (in Bash and C on Linux), CS 392, 3 sections

Fall 2020: *Algorithms* (in C++), CS 385, 5 sections

Summer 2020: *Systems Programming* (in Bash and C on Linux), CS 392, 1 section
Precollege summer program

Spring 2020: *Creative Problem Solving and Team Programming* (in C/C++/Java/Python), CS 370, 1 section
Algorithms (in C++), CS 385, 1 section
Systems Programming (in Bash and C on Linux), CS 392, 2 sections

Fall 2019: *Algorithms* (in C++), CS 385, 5 sections

Summer 2019: Precollege summer program

Spring 2019: *Introduction to Computer Science* (in Python), CS 115, 2 sections
Creative Problem Solving and Team Programming (in C/C++/Java/Python), CS 370, 1 section
Algorithms (in C++), CS 385, 1 section

Fall 2018: *Introduction to Computer Science* (in Python), CS 115, 2 sections
Algorithms (in C++), CS 385, 2 sections

Summer 2018: Precollege summer program

Spring 2018: *Introduction to Computer Science* (in Python), CS 115, 2 sections
Creative Problem Solving and Team Programming (in C/C++/Java/Python), CS 370,
1 section
Algorithms (in C++), CS 385, 1 section

Fall 2017: *Introduction to Computer Science* (in Python), CS 115, 2 sections
Algorithms (in C++), CS 385, 2 sections

Summer 2017: *Algorithms* (in C++), CS 385, 1 section
Precollege summer program

Spring 2017: *Introduction to Computer Science* (in Python), CS 115, 2 sections
Creative Problem Solving and Team Programming (in C/C++/Java/Python), CS 370, 1 section
Algorithms (in C++), CS 385, 1 section

Fall 2016: *Introduction to Computer Science* (in Python), CS 115, 2 sections
Algorithms (in C++), CS 385, 2 sections

Summer 2016: *Algorithms* (in C++), CS 385, 1 section
Precollege summer program

Spring 2016: *Introduction to Computer Science* (in Python), CS 115, 2 sections
Creative Problem Solving and Team Programming (in C/C++/Java/Python), CS 370, 1 section
Algorithms (in C++), CS 385, 1 section

Fall 2015: *Introduction to Web Programming and Project Development* (in HTML/CSS/JavaScript),
CS 146, 2 sections
Algorithms (in C++), CS 385, 2 sections

Summer 2015: *Algorithms* (in C++), CS 385, 1 section
Precollege summer program

- Spring 2015: *Introduction to Computer Science* (in Python), CS 115, 1 section
Creative Problem Solving and Team Programming (in C/C++/Java/Python), CS 370, 1 section
Algorithms (in C++), CS 385, 1 section
- Fall 2014: *Introduction to Computer Science* (in Python), CS 115, 1 section
Introduction to Web Programming and Project Development (in HTML/CSS/JavaScript), CS 146, 1 section
Algorithms (in C++), CS 385, 1 section

Bergen County Academies, Hackensack, NJ

Teacher of Computer Science Technology

09/11 – 07/14

- Taught a variety of computer science courses to advanced high school students
- Developed all new curricula, selected textbooks and supplementary materials, and created and graded labs, quizzes, and tests
- Led after-school tutoring sessions
- Served as the advisor of the Computer Science Club and led after-school enrichment sessions
- Implemented auto-grader shell scripts to help students determine the correctness of their lab assignments
- Taught number theory, algebra, and problem-solving skills at the summer math camp program

2013-2014: *AP Computer Science A* (in Java), full year
Data Structures (in Java), full year
Introduction to Computer Science (in Python), full year
Java Programming, full year
Linux Shell Programming, 1 trimester
Pre-AP Intro to Computer Science (in Java), 1 trimester
 Math camp summer program

2012-2013: *AP Computer Science A* (in Java), full year, 2 sections
Programming I (in Python), full year
Open Source and Mobile App Development (in Java), full year
System Support and Maintenance (in Bash and C on Linux), full year
Intro to Java, 1 trimester
 Math camp summer program

2011-2012: *Programming I* (in Python), full year
Open Source and Mobile App Development (in Java), full year
System Support and Maintenance (in Bash and C on Linux), full year
Intro to Java, 1 trimester
Mechatronics, weekly project, full year
 Math camp summer program

Stevens Institute of Technology, Hoboken, NJ

Research Assistant

08/05 – 06/10

- Extended OMNeT++ with an underwater channel model implemented in MATLAB and exported as a shared library
- Designed and implemented a configurable acoustic software modem in Java/C that integrates with the sockets interface for easy deployment of network applications
- Characterized the Hudson River estuary as a communications channel by generating the scattering function and all derived views
- Built PC104-based computers for use in an underwater sensor network
- Researched diver detection using passive sonar

Teaching Assistant

01/03 – 05/04; 08/07 – 12/07

- Created syllabus, chose required textbook and supplementary materials, and devised and graded assignments for a new course in concurrent programming in conjunction with my advisor (Fall 2007)
- Taught object-oriented software design and programming techniques (Spring 2003), introduction to computer science (Fall 2003), and data structures and algorithms (Spring 2004) under the guidance of the professor
- Led recitation sessions, held office hours, and devised and graded assignments

Industry Experience:

L3Harris Technologies, Clifton, NJ

Lead Software Engineer

09/21 – 12/21

- Reverse engineered a C++ codebase for electronic warfare to depict its architecture in UML
- Maintained the codebase and drafted manuals that explain the product's API

Thomson Reuters, New York, NY

Technical Specialist

07/10 – 08/11

- Researched and implemented natural language processing algorithms that index and retrieve related news articles in C++

- Improved the GNU Make build process (reduced build time from 30 minutes to 3 minutes)
- Added a testing framework in PHP to objectively measure the performance gain associated with various startup parameters
- Instituted nightly load testing of the application server via Hudson and Siege
- Implemented several document clustering algorithms that offer varying ratios of speed versus accuracy

Cargo Manager Systems, Union, NJ

Web Developer Consultant

10/07 – 10/08

- Enhanced n-tier web applications (JSP/XHTML – Java beans – JDBC) that manage imports, exports, transportation, and warehousing for the supply chain industry
- Modified functionality of a web application that performs government filing of import shipments

Syncsort Incorporated, Woodcliff Lake, NJ

Associate Software Engineer

06/04 – 08/05

- Enhanced DMExpress, an application for sorting, aggregating, copying, joining, and merging extremely large quantities of data
- Utilized MFC to add new front-end features
- Developed back-end infrastructure in standard C++ to run DMExpress tasks in parallel
- Wrote and executed WinRunner scripts to ensure program stability
- Created Perl and Bash scripts to facilitate source code management procedures

KPMG LLP, Montvale, NJ

Programmer Analyst

10/02 – 12/02

- Debugged, maintained, and enhanced KPMG/Link Enterprise, an application that manages expatriate employees and related tax issues
- Performed and tested software builds

Prudential Financial, Iselin, NJ

Web/Application Developer

07/01 – 07/02

- Worked in a team to develop an award-winning application for content management and desktop publishing using ASP 3.0
- Developed a Visual Basic tool that tests the business logic of asset allocation software written in XML
- Designed and coded an ASP 3.0 user interface for Asset Allocation Online, a web application that enables a client to perform his or her own asset allocation by answering questions over the Internet
- Redesigned a series of web pages that contains the monthly performance review and daily unit values of variable life insurance products

ADP, Roseland, NJ

Web Developer Co-op

06/00 – 08/00

- Created an intranet site for the PCPI - Internet Payroll for the PC - department to keep all team members aware of their project's status
- Devised a JSP application that dynamically creates links to files within specific directories so that information can easily be added to the site without maintenance

Seton Hall University, South Orange, NJ

Software Developer

05/00 – 07/00; 05/99 – 07/99

- Provided new software for professors seeking teaching tools
- Proposed, designed, and developed a sorting algorithms demo in Java for use in the CDI - Curriculum Development Initiative - project
- Designed and developed a truth table constructor in Java for use in the CDI project

Publications:

Brian Borowski and Dan Duchamp, *Measurement-based Underwater Acoustic Physical Layer Simulation*, in Proceedings of MTS/IEEE OCEANS 2010, September 2010, Seattle, Washington.

Brian Borowski and Dan Duchamp, *Short Paper: The Software Modem – A Software Modem for Underwater Acoustic Communication*, in Proceedings of the ACM International Workshop on Underwater Networks (WUWNet'09), November 2009, Berkeley, California.

Brian Borowski, *Characterization of a Very Shallow Water Acoustic Communication Channel*, in Proceedings of MTS/IEEE OCEANS 2009, October 2009, Biloxi, Mississippi.

Brian Borowski, Alexander Sutin, Heui-Seol Roh, and Barry Bunin, *Passive Acoustic Threat Detection in Estuarine Environments*, in Proceedings of SPIE Vol. 6945, March 2008, Orlando, Florida.

Brian Borowski, Heui-Seol Roh, Barry Bunin, and Alexander Sutin, *Estimation of Passive Acoustic Threat Detection Distances in Estuarine Environments*, in Proceedings of the 153rd Meeting of the Acoustical Society of America, June 2007, Salt Lake City, Utah.

(Placed second in the *Best Student Paper* competition of the Engineering Acoustics section)

Presentations:

The Softwater Modem – A Software Modem for Underwater Acoustic Communication, ACM International Workshop on Underwater Networks (WUWNet'09), November 3, 2009, Berkeley, California.

Characterization of a Very Shallow Water Acoustic Communication Channel, MTS/IEEE OCEANS 2009, October 29, 2009, Biloxi, Mississippi.

Characterization of a Very Shallow Water Acoustic Communication Channel, Maritime Security Laboratory at Stevens Institute of Technology, October 5, 2009, Hoboken, NJ. (End-of-year review presentation given to ONR sponsor)

Elements of Channel Characterization, Maritime Security Laboratory at Stevens Institute of Technology, January 6, 2009, Hoboken, NJ.

A Software-Based Approach to Communication in Underwater Acoustic Sensor Networks, Stevens Institute of Technology, November 24, 2008, Hoboken, NJ. (Presentation used at thesis proposal defense)

Passive Acoustic Threat Detection in Estuarine Environments, Stevens Institute of Technology, March 28, 2008, Hoboken, NJ. (Presentation used at oral qualifying examination)

Estimation of Passive Acoustic Threat Detection Distances in Estuarine Environments, 153rd Meeting of the Acoustical Society of America, June 5, 2007, Salt Lake City, Utah.

Skills:

Programming Languages: Java, C++, C, Visual Basic, MATLAB, PHP, Python, Scheme, Bash, and SQL

Web Technologies: HTML, CSS, JavaScript, JSON, and XML

Databases: MySQL

Operating Systems: Microsoft Windows 3.1 – 11, various Linux distributions, and Oracle VirtualBox

Version Control: Git, SVN/Subclipse, and Rational ClearCase/ClearQuest

Software: Eclipse, IntelliJ, Microsoft Office, and Corel Paint Shop Pro

Hardware: Proficient at building, upgrading, and troubleshooting Intel and AMD-based PCs

Certifications:

Joint NPM/AGO Organ Colleague Certification, July 2014

Colleague, American Guild of Organists, December 2013

State of NJ Standard Certificate - Teacher of Computer Science Technology, July 2012

Sun Certified Programmer for the Java 2 Platform, May 2002

Honors:

2020 Stevens Alumni Association - Outstanding Teacher Award – June 2021

Selected by recent graduates as the faculty member who has had a major impact on their education

2018 Faculty Award Recipient for Student-Centricity – February 2019

Selected by colleagues as the faculty member who has contributed significantly to promoting student-centricity

Distinguished Teaching Faculty Award – May 2018

Presented at the Annual Student Awards Brunch for embodying what it means to be a student-centric professor at Stevens

Harvey N. Davis Distinguished Teaching Assistant Professor – September 2016

Competitively awarded across all departments at Stevens Institute of Technology; 1 award granted at the rank of assistant professor

Stanley Fellowship, September 2009 – May 2010 (tuition, fees, and stipend)

Competitively awarded across all fields at Stevens Institute of Technology; total of 8 awards granted

Stanley Fellowship, September 2008 – May 2009 (tuition, fees, and stipend)

Competitively awarded across all fields at Stevens Institute of Technology; total of 10 awards granted

Upsilon Pi Epsilon – the Honor Society in Computing and Information Disciplines, December 2006

Technogenesis Fellowship, September 2005

Outstanding Computer Science Teaching Assistant, May 2004

First in Class, Summa Cum Laude, and Computer Science Departmental Honors Citation, May 2001

Pi Mu Epsilon – the Honorary National Mathematics Society, May 2000

Seton Hall Provost Scholarship (4-year, full tuition), September 1997

Music Experience:

Saint James of the Marches Church, Totowa, NJ

Director of Music and Organist

07/22 – Present

Saint Bonaventure Church, Paterson, NJ

Director of Music and Organist

11/91 – 05/22

Seton Hall University, South Orange, NJ

Assistant Organist/Cantor

09/97 - 05/01

Memberships: **ACM** (Association for Computing Machinery)
IEEE (Institute of Electrical and Electronics Engineers)
AGO (American Guild of Organists)
NPM (National Association of Pastoral Musicians)

Last updated on February 8, 2023