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Joseph Michael Spitzer

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Education

- **University of Massachusetts** — Amherst, MA
  M.S. Computer Science (3.97) — 09/2018 - 02/2021
- **University of Saint Thomas** — Saint Paul, MN
  B.A. Computer Science (4.00) & B.A. Applied Mathematics (3.75) — 09/2010 - 05/2015
  - Magna Cum Laude graduate with a cumulative GPA of 3.89.

Employment (Industry)

- **Advisory Engineer at IBM (April 2024 - Present)** Lateral internal transfer into the Cloud organization. A member of the software-defined networking group, responsible for the overlay that partitions IBM Cloud into VPC instances for clients. Specific focus is on development and maintenance of our VPC fabric controller, namely the proliferation of gRPC streaming, GPU networking support, as well as routing work around BGP & MPLS. Furthermore, engaged as a member of the internal patent community serving as a voting member of an Invention Development Team (IDT), in addition to filing two patents, one of which has been granted.
- **Advisory Engineer at IBM (May 2022 - March 2024)** Continued as a core back-end developer of containerized web services, though now in a full lead capacity. Designed, developed, and maintained critical applications for our broader department. A first being an automation integration service, which built a convenient bi-directional abstraction between the Ansible® Automation Platform & OpenShift®. This allowed application & automation developers alike to provide self-service solutions to end-users in a standardized manner, eventually made accessible through Slack and an intranet portal. A second service provided management of, and access to, auxiliary aspects of virtual machines. This included digital certificates, middleware, and compliance scans. Such was consumed by a front-end view, so to give employees more complete insight into their private cloud deployments.
- **Staff Engineer at IBM (May 2021 - April 2022)** Software engineer within the CIO organization, which provides IT services to employees. In particular, co-lead development of an API gateway proxy server to facilitate the migration off of a legacy monolith. Additionally, the primary back-end engineer on a micro-service-backed web application providing automated server management through Ansible® Tower. Our software is used to support virtual and physical infrastructure for thousands of users and is hosted on the RedHat OpenShift® Platform.
- **Graduate Intern at Nokia Bell Labs (June 2020 - August 2020)** Member of the group researching the orchestration of teams of heterogeneous autonomous robots, which are often present in a factory or warehouse setting. Designed a finite-state machine for the centralized orchestrator to foresee and prevent potential collisions of robots. Implemented the design in Go, utilizing simulation software.
- **Software Engineer II at Veritas Technologies (June 2017 - August 2018)** Continued responsibilities as a recognized subject-matter expert concerning technicalities of our web client. Co-lead the front-end community of practice, a cross-site collaborative development group. Transitioned to application middleware development on CloudPoint™; multi-cloud data management software which sought to aggregate control of heterogeneous public cloud environments. Worked to assist in the restructure of the API gateway in Node.js, for consumption by customers and improved scalability.
- **Software Engineer I at Symantec Corporation/Veritas Technologies (June 2015 - May 2017)** Front-end JavaScript developer on Veritas Velocity™, a distributed copy data management application. Velocity sought to streamline control of Oracle snapshots; allowing database administrators convenient automation and application developers the ability of self-service. Responsible for integrating with back-end web services on features such as role-based access control and point-in-time scheduling configuration, in order to deliver a robust interface for customers.

Employment (Academia)

- **Graduate Teaching Assistant (Fall 2020)** Led instruction of one of the three weekly course meetings for the large undergraduate Web Programming course. Assisted in the development of programming exercises and assignments that explored web technologies.
- **Graduate Research Assistant (September 2018 - May 2020)** Collaborator of the research lab studying programming languages and compilers. Worked toward examining the effectiveness of a strict JavaScript subset to enhance development, particularly among beginners. This subset is constructed via source-to-source JavaScript compilation, which performs static checks and inserts dynamic checks for runtime. The transpiler is actively used each semester in the undergraduate Programming Methodology course.
- **Undergraduate Teaching Assistant (Fall 2014 & Spring 2015)** Graded homework and held office hours to provide assistance to students as needed. Worked with a Linear Algebra section in the fall and a Discrete Mathematics section in the spring.
- **Computer Science Tutor (September 2013 - May 2015)** Assisted students with programming in the context of Java and JavaScript, both debugging and understanding concepts.
- **Undergraduate Research Assistant (January 2012 - January 2015)** Regarding computational knot theory; involved problem-solving and scripting skills. Particular projects included the explicit characterization of tight knot configurations and working toward the discovery of new knotting patterns in folded proteins.

Patents

- Billy Lee Grier, **Joseph Spitzer**, and Christopher Wood. *Localhost Digital Certificate Discovery and Reconciliation*. Assigned to IBM by the USPTO, September 2025.

Publications

- **Joseph Spitzer**, Joydeep Biswas, and Arjun Guha. *Making High-Performance Robots Safe and Easy to Use for an Introduction to Computing*. Educational Advances in Artificial Intelligence (EAAI), February 2020.
- **Joseph Spitzer**, Kate Lockwood, and Jason Sawin. *Harnessing the Power in Your Pocket*. IBM Center for Advanced Studies Conference on Computer Science and Software Engineering (CASCON), November 2015.

Presentations

- **IBM Engineering Excellence Conference (November 2023 & 2024)** Annual selective internal technical conference. Gave a half-hour overview seminar, on two occasions. In 2023, showcased an extensible containerized web micro-service supporting automation integration between Ansible® playbooks & OpenShift® hosted applications. In 2024, discussed observations relating to the execution time of our automated test suite in Go, and the corresponding efficiencies implemented. *Virtual*
- **EAAI Main Track (February 2020)** Based on publication, which involved collaboration with a robotics group to augment an existing robot infrastructure with the ability to program via JavaScript and view a simulator in the browser. The goal was to provide a language layer abstraction so to ease the difficulty of programming high-performance robots. *New York, NY USA*
- **Veritas Cutting Edge (November 2016)** Gave a technical talk entitled *JavaScript: The Cutting-Edge Parts* at our annual internal engineering conference. Presentation highlighted principles of JavaScript development such as dynamic typing and functional programming, prior to providing an overview of language features introduced in ECMAScript 6. *Saint Paul, MN USA*
- **IBM CASCON Emerging Technologies Track (November 2015)** Based on publication, which sought to explore the architectural and design implications of utilizing unused cycles on employee company-issued mobile devices, much like SETI@home© does with personal computers, to process business intelligence data. *Toronto, ON CAN*

- **Symantec NetBackup™ Customer Forum (September 2015)** Forum was open to technical staff from companies who are customers or partners of NetBackup™, the corporation's flagship product. Assisted a product manager and user-interface researcher in configuring a demo environment and orchestrating a walk-through of an upcoming Oracle database management product; Veritas Velocity™. *Saint Paul, MN USA*

Posters

- **Joseph Spitzer**, Eric Rawdon. *Coarse-Grain Model for Knotted Glueball Creation*. Joint Mathematics Meetings (JMM), January 2015. *San Antonio, TX USA*
- **Joseph Spitzer**, Christopher Baldwin, Eric Rawdon. *Analyzing Knotting in Folded Proteins*. Joint Mathematics Meetings (JMM), January 2014. *Baltimore, MD USA*

Service

- **Family Service Rochester (January 2022 - Present)** Consumer technology assistant for senior and disable citizens by request.
- **Rochester Public Schools (Spring 2022)** AP Computer Science tutor at a local public high school for an hour each week. Helped students understand programming principles and debug Java code in the classroom.
- **UMass CICS Committee Against Racism and for Equity (July 2020 - December 2020)** On the subcommittee focused on mentoring people of the college community. Assisted in the development of a sourcebook for students, specifically those from groups who may be less familiar with university norms, such as first-generation and non-domestic individuals.
- **Outreach Workshop in Partnership with Holyoke Codes (July 2019)** Engineered a robot programming platform, using it to teach high school students computing paradigms and robotics for a week.
- **Veritas University Relations Team (June 2016 - August 2018)** Visited college campuses, as well as high schools, to discuss professional aspects of the technology industry and champion the importance of computer science education.
- **Disability Resources Student Assistant (Fall 2012, Fall 2013, & Fall 2014)** Took careful notes for those with learning deficiencies in Introduction to Programming and Web Development. Scribed on the behalf of a blind student for Data Structures exams.
- **St. Joseph's Hospital Volunteer (June 2008 - August 2011)** Over two hundred summer hours serving as a patient and family escort as well as an interdepartment courier at Ascension SE Wisconsin Hospital - St. Joseph Campus.

Honors

- **IBM Council of Innovation Leadership Award (November 2024)** A significant distinction for impactful support of the IBM inventor community. Served as a member of the Invention Development Team (IDT) focusing on vetting submitted disclosures regarding the metaverse.
- **IBM Outstanding Technical Achievement Award (April 2023)** A prestigious internal technical honor granted sparingly after rigorous review of a sponsored application. Award instance was received for a novel design & implementation of automated middleware installation on virtual machines within our private cloud environment, which provided significant time savings and much needed standardization.
- **National Society of Collegiate Scholars Induction (April 2012)** A non-profit honors organization for collegiate students accredited with the Association of College Honor Societies.
- **Boys State (June 2009)** Week-long leadership and citizenship program sponsored by the American Legion for those nominated by their high school.

Skills

- **Languages / Libraries / Frameworks:** Axios, Babel, Express, Gin, Ginkgo, Go, Gomega, HTML, Jasmine, JavaScript / TS, Jest, Resty, Winston, LaTeX
- **Environments / Tools:** Ansible (AAP / AWX / Molecule / Tower), cURL, Bash, Git / GitHub, ESLint / JSHint, Make, MongoDB, Node.js / npm / npx, Swagger, tmux
- **Concepts / Protocols:** BDD, CI/CD (GitHub Actions / Travis CI), Containers (Docker / K8s / OpenShift / Podman), Data Interchange (CSV / JSON / YAML), HTTP(S), ODM (MGM, Mongoose), OOP, REST, RPC (gRPC / Protocol Buffers), Unix OS (Fedora / macOS/ Ubuntu), WS(S)