Isaac D. **Griffith, Ph.D.**

RESEARCH SCIENTIST · SOFTWARE ENGINEER

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Education

Ph.D. Computer Science
MONTANA STATE UNIVERSITY

Bozeman, MT
December 2021

Design Pattern Decay: An Extended Taxonomy and Empirical Study of Grime and its Impact on Software Product Quality and Technical Debt

M.S. Computer Science
MONTANA STATE UNIVERSITY

Bozeman, MT
December 2014

Technical Debt Management in Release Planning – A Decision Support Framework

Graduate Certificate in Applied Statistics
MONTANA STATE UNIVERSITY

Bozeman, MT
December 2014

B.S. Computer Science & B.A. Philosophy
MONTANA STATE UNIVERSITY

Bozeman, MT
May 2011

Experience

Idaho State University
ASSISTANT PROFESSOR

Aug. 2018–Present
Pocatello, ID

- Instructor for several courses including Programming Paradigms, Systems Analysis and Design, Introduction to Software Engineering, Introduction to Computer Programming (in C#), Computer Graphics, Software Testing and Formal Methods, Software Evolution and Maintenance, Empirical Software Engineering, and Advanced Object Oriented Programming.
- Director of a research lab focused on Empirical Software Engineering. Having supervised 7 undergraduate students focusing on research in the areas of Software Language Engineering, Design Science, Extended Reality (using the Magic Leap and Unity) integrated with computational creativity, IIoT and predictive maintenance using RPi and Microservices, and machine learning applied to document analysis and automation of systematic mapping studies.
- Director of the initial ISU Software Factory in the creation of an event scheduling software system.

Montana State University – Computer Science Department
INSTRUCTOR/TEACHING ASSISTANT

Oct. 2011–May. 2018
Bozeman, MT

- Teaching Assistant for Joy and Beauty of Data course in fall 2017, covering two labs consisting of 51 students. I focused on helping students to understand the implementation of python code along with the intricacies of using the python data science libraries: NumPy, Scikit-learn, pandas, and matplotlib.
- Instructor for Basic Data Structures and Algorithms Course over the summer of 2016, which included 12 students. Worked to improve student's critical thinking and problem solving skills using test driven assignments with clear goals while focusing on algorithm design and underlying concepts.
- Instructor for Introduction to Java I course over the summer of 2015, which included 11 students. Integrated both traditional lectures, pair programming in class assignments, and hands on laboratory assignments.

Montana State University – Software Engineering Laboratory
SOFTWARE ENGINEERING RESEARCH ASSISTANT

Oct. 2011–May 2018
Bozeman, MT

- Utilized data science methods to evaluate and compare quality models resulting in improved choice and understanding of software quality by clients as evidenced by the development of quality models based on industry and academic standards as well as a publication.
- Setup collaboration between Montana State University Software Engineering Laboratory and Mississippi State University Software Engineering Laboratory to study the relationship between software quality models and technical debt, resulting in a publication at the 6th International Workshop on Technical Debt.
- Implementation of an experimental pipeline to evaluate the effects of different coding and architectural issues on software product quality attributes as realized in multiple tools and research publications.

TechLink Center
SOFTWARE QUALITY ENGINEER

Oct. 2015–Oct 2017

Bozeman, MT

- Point of contact between CERL/DLA, DoD Contractors and TechLink to spearhead the continuous build process and automated analysis resulting in the automated build of 4 DLA software projects.
- Initiated the Software Product Quality Control program using SonarQube as basis for a Quality Modelling framework resulting in 3 plugins composed of 10 modules.
- Designed and developed a testing tool to automate testing of traditional and web applications using a domain specific language, Selenium UI, White, and Cucumber. This tool reduced team overall effort, increased overall productivity, and increased our reliability.

Montana State University – Computational Ecology Research Group
LEAD ENGINEER / RESEARCH ASSISTANT

Oct. 2009–Oct. 2015

Bozeman, MT

- Led the engineering team, consisting of 4 student engineers, in designing and developing the Network Exchange Objects modeling framework for ecosystem simulation resulting in a highly modular simulation environment with 85% test coverage and several publications.
- Developed a visual domain specific language for the construction of Network Exchange Objects model components resulting in the reduction in training and development time for novice and intermediate cross-discipline users.
- Automated the build and analysis of the framework using Jenkins CI and SonarQube™ which resulted in faster turn-around in the identification and remediation of technical debt and other quality issues.

Advanced Acoustic Concepts
SOFTWARE ENGINEERING INTERN

Oct. 2008–Oct. 2010

Bozeman, MT

- Implemented a webapp using google web toolkit using a reflection based algorithm to handle multiple XML formats for shipboard maintenance data.
- Provided basic statistical data analysis and charts to help sailors understand the effects of their maintenance programs and to help collect data and improve the overall maintenance program.
- Maintained and initiated the development of a company wide UI development guideline.

Technical Skills

Software Engineering	C#	Bundler	Windows
Software Architecture	Ruby	MSBuild	Linux
Software Quality Assurance	R	Git	Domain-Specific Languages
Software Quality Modeling	SQL	Hg	TDD
Software Testing	JavaScript	SVN	BDD
Software Measurement	TypeScript	CVS	Agile/Lean
Software Evolution	Vue.js	Docker	Scrum
Test Design	JavaFX	Docker-Compose	Quantitative Research
Statistics	Unity	AWS Fargate	Quantitative Analysis
Experimentation	OpenGL	AWS ECS	Quality Engineering
Case Study Methods	matplotlib	AWS ECR	Quality Management
Data Analytics	Scikit-Learn	Microservices	Developer Tooling
Relational Databases	Pandas	Design Patterns	Simulation
Data Science	Rails	Design Principles	Apache Hadoop
Technical Debt Analysis	Grails	UML	Mapreduce
Technical Debt Management	JUnit	OCL	Selenium
Java	TestNG	Object-Relational Mapping	Magin Leap
Groovy	Spock	Jenkins CI	Augmented Reality
Python	Gradle	Travis CI	Virtual Reality
Scala	Maven	CI/CD	Mixed Reality

References

Dr. Paul Bodily
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Idaho State University
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Bozeman, MT 59717

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Bozeman, MT 59717