KEVIN PYATT

Software Engineer, Learning Architect, IT Leader

Denver, CO USA

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www.linkedin.com

www.scholar.google.com

https://github.com/kpyatt

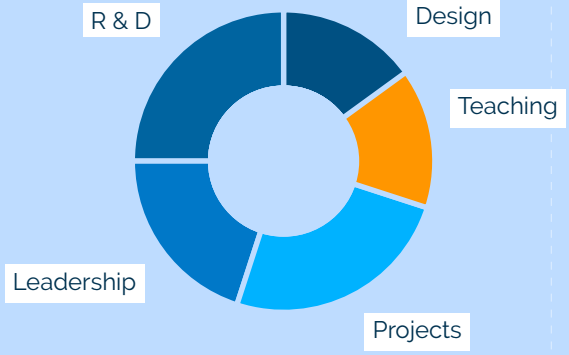
Software engineer, learning architect and IT Leader, with extensive industry and research experience.

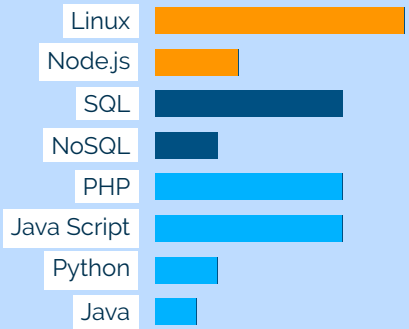
Ph.D.

Mission: "I seek to discover, create, share, document, test and deliver engineering-design solutions to help improve the human condition and our place on the planet."

TECHNOLOGIES, METHODOLOGIES & ARCHITECTURES

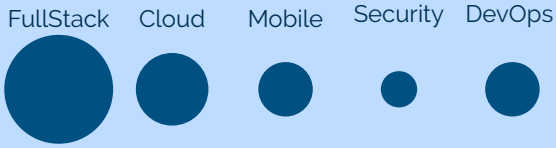
- Full Stack Engineer
- Front-end Certified
- SQL Dev. Certified
- PHP Dev. Certified





I build web and mobile learning systems built on established design frameworks, methodologies and architectures (i.e., LAMP, MEAN, REST, SOAP, SDLC, ADDIE). My engineering design work is guided by test-driven, rapid-prototype design.

I develop learning systems which take the the form of instructional games (LX) and instructional software (UI/UX).

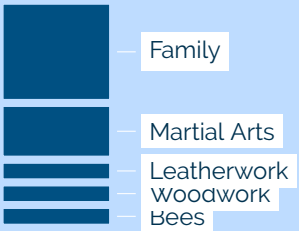


ACTVITIES

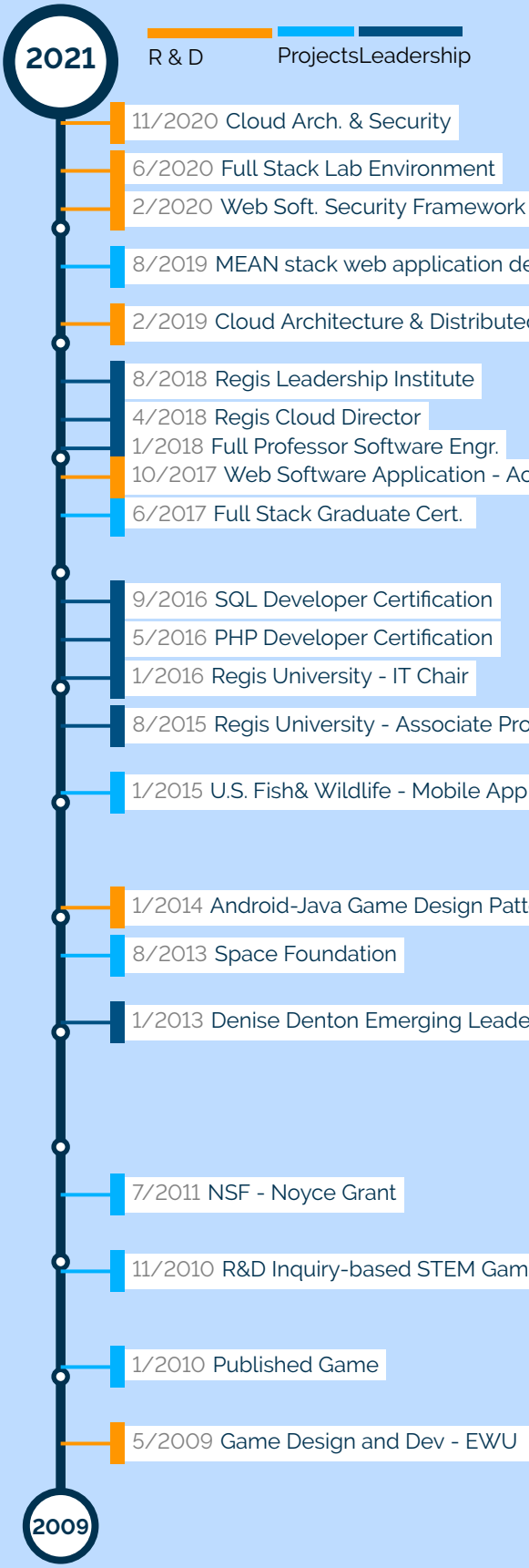
10 years

volunteer editor: **SFS - Software Freedom School**

Away from work, I am with family, practicing Muay Thai, or being a maker in some fashion. I enjoy woodcraft and leathercraft. I also raise bees.



EXPERIENCE



KEVIN PYATT, PH.D.

Professor ⋄ Chair ⋄ Software Engineering R & D
IT Department ⋄ College of Computer & Information Sciences
Regis University ⋄ Denver, CO, USA

***Mission**: I seek to discover, create, share, document, test and deliver engineering and design solutions to help improve the human condition and our place on the planet.*

EDUCATION

Ph.D. Instructional Design for Online Learning
Capella University, Minneapolis, MN
Dissertation: *Learner Performance and Attitudes in Traditional Versus Simulated Lab Experiences*

M.S. Computer Information Systems - *Software Engineering*
Regis University, Denver, CO.
Thesis: *Utilizing Fundamental Learning Principles to Design and Develop an Instructional Learning Tool for Chemistry*

B.S. Biology, *Chemistry Minor*
Fort Lewis College, Durango, CO.
Thesis: *Distribution of Macroinvertebrates in a Rocky Mountain Stream - Inferences into Water Quality from Benthic Zone.*

SOFTWARE ENGINEERING R & D

The R&D projects which are described below are the recent and significant works for which I have taken a major role as architect, developer, or leader. These projects cross the domains of software engineering, full-stack engineering, security systems and systems engineering.

Web Software Security Framework 2019 - present

Overview: The Web Software Security Lab is DevOps Cloud-based environment designed and developed for software engineers and security professionals to test the security of public-facing APIs. This environment is is designed to scale to enterprise levels.

- *Architecture*: IaaS; PaaS; and SaaS. *Essential Technologies:* Linux, Jenkins; Docker; and Git.
- **Role:** I serve(d) as the project director and lead a team of ten faculty, graduate students and project scientists. (See: [1].)

Cloud Architecture & Distributed Software Systems - Regis Cloud 2016 - present

Overview: The focus of this project was on integration, configuration, security and deployment of web-software applications, microservices and private storage within a full-stack architecture and hosted on Regis Cloud.

- *Architecture*: IaaS; PaaS; and SaaS. *Essential Technologies:* Linux, Jenkins; Docker; and Git.
- **Role:** I serve(d) as the project director and lead a team of ten faculty, graduate students and project scientists. (See: [2].)

Web Software Application - Achievement Hound 2018 - present

Overview: Achievement Hound is a database-driven web-software application designed for faculty in the School of Pharmacy to collect, record, update, maintain and report level of effort, accomplishments, achievements and other relevant work that must be frequently recorded and reported.

- *Architecture(s)*: MEAN-stack. *Essential Technologies*: Linux, MongoDB; Node.js; Angular; Git; Heroku. *Design Pattern(s)*: Database-driven web-app; three-tier, rapid-prototype design.
- **Role:** I serve(d) as project director. Led team of faculty, graduate students and project scientists through rapid-prototype design and development. This was a two-year grant-funded project and collaboration between School of Pharmacy and Software Engineering Unit. (See: https://github.com/egypttoc/achievementhound.)

Cloud Architecture & Security - Regis Cloud 2016 - present

Overview: Regis Cloud is a cloud solution for students and faculty to design, test, implement and scale enterprise systems, software, and data solutions for high availability, high performance, and high security uses.

- *Architecture(s)*: IaaS; PaaS; and SaaS. *Essential Technologies*: Linux, Jenkins; Docker; and Git. *Design Pattern(s)*: multi-tier, rapid-prototype design.
- **Role:** I serve(d) as project director. Led ten-member project team of faculty, graduate students and project scientists. (See [3].)

Instructional Software - Reaction Master 2017 - 2019

Overview: Reaction Master is an open-software solution to instruct students on reactions, specifically, categorical and symbolic representation of nine reaction-types typically encountered in first-year chemistry. The software was made available online, and could be accessed through a web browser. This software has gone through three revolutions in architecture, starting as a desktop application, then a mobile app., and now hybrid - listed here in reverse chronological order:

- Web-based software (2017 - 2019). *Architecture*: Full-stack. *Design pattern(s)*: MVC . *Essential technologies*: Linux, MySQL, HTML5, CSS, JQuery, Angular.
- Mobile version (2013 - 2014). *Architecture*: mobile-android, hybrid mobile-web and iOS. *Design pattern(s)*: 3-tier. *Essential technologies*: Linux, MySQLite, Java, HTML5, CSS, JQuery, Angular.
- Desktop (2002-2003). *Architecture*: Desktop application based on lingo-script. *Design pattern(s)*: Factory. *Essential technologies*: Lingo Script.
- **Role:** This project has gone through several iterations over time. The design concept has remained, while application features have evolved with emerging technologies. (See: [4]–[6]).

Mobile Invasive Species Mapping App - Invader Locator 2009 - 2015

Overview: A mobile software application designed for detection, identification, and tracking of invasive species. This was a five-year grant-funded effort. Made available to citizen scientists, students and teachers across the country for research and data collection on invasive species.

- *Architecture(s)*:mobile-android, hybrid mobile-web and iOS. *Design Pattern(s)*:native Android; hybrid mobile-web *Essential Technologies*:Java, PHP, MySQLite, HTML, Android, C#, PhoneGap Cordova, Android Studio, Eclipse.
- **Role:** I served as the lead engineer and project director. This was a five year grant, funded by National Fish & Wildlife, in collaboration with Turnbull National Wildlife Refuge. (See: [7], [8] for more information about this project).

INSTRUCTIONAL GAMES, SIMULATIONS & SOFTWARE

Game Design Patterns for Mobile Computing 2016 - 2017

Overview: Game design patterns are an excellent vehicle to explore, develop and implement essential UI/UX features and interactions for application development. As we better understand UI, we better understand UX; and game design patterns help facilitate this. In this project we studied design patterns

between native android and Java. We did this by designing and building a simple game using a Java architecture and framework. We also developed a congruent application using using native Android. From this process we discovered and validated a feasible framework and architecture which can guide application development in native android.

- *Architecture(s)*: Java, Mobile. *Essential Technologies*: Java, MySQL, XML, HTML5, Android Studio, Eclipse, Git. *Design Pattern(s)*: two-tier, three-tier, rapid-prototype design.
- **Role:** I serve(d) as project director where I led project team of faculty, graduate students and project scientists. (See: [9].)

Participatory Concept Inventory Creation as a Method for Instructional Game Validation
2015 - 2017
Overview: The focus of this project was to explore the feasibility of participatory concept inventory creation (PCIC) as a vehicle for validating instructional games. A need exists for research in this domain because inventory validation is an historically time-consuming and resource-intensive affair, as is the creation of instructional games. Therefore, we argue, as many others have, a need exists for the design and development of instructional games at the university level. We also argue that students should be participants in the creation of instructional games instead of sole recipients. To this end, a game design-and-validation process is needed where learners are participants and co-creators in question generation and concept inventory validation.

- *Architecture(s)*: PCIC, game asset database. *Essential Technologies*: phaser.io. *Design Pattern(s)*: rapid-prototype design.
- **Role:** I serve(d) as project director where I led project team of faculty, graduate students and project scientists. (See: [10].)

EXPERIENCE

Professor & Chair - Software Engineering - College of Computer & Information Sciences
Regis University, Denver, CO 2015 - present

- Lead graduate-level R&D in software engineering.
- Regis Cloud Director.
- Lead design, development and implementation of "Computing for the Common Good" software applications.
- Oversee quality assurance.

Associate Professor - Software Engineering - College of Computer & Information Sciences
Regis University, Denver, CO 2012 - 2015

- Lead graduate-level R&D in software engineering program.
- Develop and teach graduate-level courses in Software Engineering program: Advanced Java, Enterprise Java, Android, Mobile Frameworks, Web Software Applications, Web Frameworks.

Assistant Professor - Science & Technology
Eastern Washington University - Cheney, WA. 2007 - 2012

- Simulation and Instructional game R&D
- Mobile application development and R&D

Adjunct Faculty - University California College Prep (UCCP)
University California, Santa Cruz – Santa Cruz. Jun 2005 - Jun 2007

- Simulation R& D

- Designed, developed and implemented lab simulation software, courseware, and learning objects for Physics and Chemistry courses. Evaluated and validated instructional solutions.

Chemistry Teacher – Douglas County Schools
Ponderosa High School– Parker, CO. Aug 1999 - Jun 2007

- Designed, developed and implemented AP Chemistry program, learning objects, lab simulations, instructional games, and software solutions.

CONTRACTS & CONSULTING

- Pyatt, K. and Brooks, M. (2019). Achievement Hound. Award: $5,000 to fund development of software application.
- Conference Attendance - Smithsonian Science Education Center. "Building Awareness for STEM Education in Colorado". Denver Museum of Nature and Science. (October, 2016).
- Denise Denton Emerging Leaders Grant: Funding award to support travel to Emerging Leaders Workshop. (2016). Award: $800
- Pyatt, K. and Litz, T. (2015). Experiential Learning through Educational Games. Award: $5,000
- Principal Investigator, K. Pyatt with L. Sperry. Project Title: "Impact of Kinems Learning Games on Acquisition of Mental Math Calculations, Memory and Movement in children with Autism Spectrum Disorder". (2014). Award: $2,500
- Principal Investigator, M. Rule with Co-I: K.Pyatt.. Project Title: "National Fish and Wildlife Foundation – Pulling Together: Managing Invasives", Scablands Weed Mapping, Education and Outreach Software program. (2010 - 2013). Award: **$139,700**. [pdf]
- Principal Investigator, K. Adolphson with Co-Is: K. Pyatt; H. McKean; B. Alvin; P. O'Connell. NSF DUE-1035510, Project Title: "Eastern Washington University Robert Noyce Scholarship Program". (2010 - 2015). Award: **$1,2000,000**.
- CK-12 Foundation, Palo Alto CA. Author of 26-chapter interactive, mobile chemistry book – Concept Chemistry (2013).[pdf]
- U.S. Department of Education Investing in Innovation (i3) Fund Reviewer. (August, 2011).
- Microsoft Instructional Technologies Product Development Division "Volt" (2010, October). Educational Site Visit.
- Chemistry coder. WebAssign (2004 - 2007). Coding of undergraduate-level chemistry content that is complete, accurate, and meets requirements for style and functionality using several languages including Perl, HTML, and CSS. Complete coding assignments according to project schedule deadlines. Provide constructive feedback to peers as part of content review process. Proofread coding, HTML, and algorithms.
- Douglas County Virtual Academy (2007). Design, development and implementation of learning objects, labs, applications and resources.
- Aventa Learning Consultant (Instructional Designer, Content Expert) (2005). Design & development learning objects and online labs for chemistry course.
- Laurel Springs Consultant (Instructional Designer, Content Expert) (2005). Design development of online course, learning objects and simulations for students with exceptionalities.

SOFTWARE

- K. Pyatt. (2019) Achievement Hound. Regis University. https://github.com/RegisUniversity/achievementhound
- K. Pyatt. (2018) Reaction Master. Regis University. https://github.com/RegisUniversity/ReactionMaster
- K. Pyatt. (2018) Course Building Engine App. Regis University. https://github.com/RegisUniversity/CourseI
- K. Pyatt. (2017) Course Scheduled App. Regis University. https://github.com/RegisUniversity/SchedulerApp
- Pyatt, K., & Hansen, B. (2013-2015). Mobile Weed Mapping App "Invader Locator" – A Citizen Scientist Invasive Weed Mapper (Version 1.0) [Mobile App – including versions 2.2 (Froyo) and 4.3 (Jelly Bean). Channeled Scablands Cooperative Weed Management Area, Cheney, WA: Scientific Creations & KioMio. Available at: https://www.lincolncd.com/weed-mapping-area
- Pyatt, K. (2013). Reaction Master Mobile (Version 2.0). Denver, CO: Scientific Creations. http://www.redalyc.org/html/3311/331132766003/
- Pyatt, K. (2001). Formula MasterTM (Version 1.2). Littleton, CO: Scientific Creations.

Selected Peer-Reviewed Works

[1] K. Pyatt, "Web software security framework - a cloud- based environment for full-stack development," Anderson College Research Retreat - 2020, Regis University, Denver, CO, Oct. 3, 2020.

[2] ——, "Design and development of an open private-storage solution for application development.," Presentation, Presentation, Regic University, Mar. 21, 2019.

[3] K. Pyatt, I. Thomas, and I. Cisneros, "Prototype design of a private storage-as-a-service solution (i.e., ownCloud) for application development: Security, performance and scalability considerations," Regis University, Aug. 2018.

[4] K. Pyatt, *Reaction master mobile*, version 2.0, Denver, CO, 2013. [Online]. Available: http://036453d.netsolhost.com/wordpress1/reaction-master/.

[5] ——, "Use of chemistry software to teach and assess model-based reaction and equation knowledge," *Journal of Technology and Science Education*, vol. 4, no. 4, 2014.

[6] ——, *Reaction master version 2.0*, 2019. [Online]. Available: https://github.com/RegisUniversity/ReactionMaster.

[7] K. Pyatt and B. Hansen, "Engaging 21st century fluencies with inquiry learning and wireless handhelds: A work in progress," presented at the World Conference on Educational, Hypermedia and Telecommunications, Association for the Advancement of Computing in Education, 2009, pp. 4298–4307. [Online]. Available: http://www.editlib.org/p/32106.

[8] M. Rule, K. Pyatt, B. Hansen, and G. Newman, "Citizen science weed mapping program for the channeled scablands of eastern washington," presented at the Invasive Plants Conference - Meeting the Challenge: Preventing, Detecting, & Controlling Invasive Plants, 2014. DOI: https://botanicgardens.uw.edu/wp-content/uploads/sites/7/2014/10/FinalAbstractCompilation.pdf. [Online]. Available: http://www.lincolncd.com/wp-content/uploads/weed-mapping-app/Citizen-Science-Weed-Mapping-Program-Poster.pdf.

[9] R. Jonnada and K. Pyatt, "Game design patterns for mobile development - java and XML considerations," presented at the Special Interest Group on Computer Science Education SIGCSE, 2017.

[10] K. Pyatt and T. Litz, "Participatory concept inventory creation as a method for instructional game validation.," in *Proceedings of Society for Information Technology & Teacher Education International Conference*, Austin, TX: Advancement of Computing in Education (AACE), Mar. 2017, ISBN: ISBN 978-1-939797-27-8.

EDITORIAL RESPONSIBILITIES

- Panel Reviewer for Special Interest Group on Computer Science Education (SIGSCE) (2016)
- Journal of Applied Computer Science & Mathematics (2012 - present)
- Journal of Online Learning and Teaching (JOLT) http://jolt.merlot.org/editorial.html
- International Multi-Conference on Engineering and Technological Innovation: (IMETI) (2007 - present)
- Multimedia Educational Resource for Learning and Online Teaching (MERLOT)
- Book Reviewer: "Transfer of Learning from Simulation-based Environments"; Computers & Education. (2010)
- Association for the Advancement of Computing in Education (AACE). Journals include: International Journal of eLearning (IJEL); Journal of Computers in Mathematics and Science Teaching (JCMST); Journal of Interactive Learning Research (JILR); Journal of Educational Multimedia and Hypermedia (JEMH); Journal of Technology and Teacher Education (JTATE)
- Australasian Society for Computers in Learning in Tertiary Education (ASCILITE). (2007 – present)
- World Journal of Education http://www.sciedupress.com/journal/index.php/wje/about/editorialTeam