# Ruben Acuña

*Curriculum vitae*

✉ ruben.acuna@asu.edu
*10/19/2022*

## EDUCATION

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|---|---|
| anticipated 2024 | **Ph.D. in Computer Science**, *Arizona State University*, USA |
| | Advisor: Dr. Ajay Bansal |
| 2015 | **M. S. in Computer Science**, *Arizona State University*, USA |
| | Thesis: Understanding Legacy Workflows through Runtime Trace Analysis |
| | Advisors: Dr. Rida Bazzi and Dr. Zoé Lacroix |
| 2011 | **B. S. in Computer Science**, *Arizona State University*, USA, *summa cum laude* |
| | Capstone: Application of Graph Databases to Gene Regulatory Networks |
| 2009 | **Associate in Science**, *Chandler-Gilbert Community College*, USA, *highest distinction* |

## EMPLOYMENT

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|---|---|
| 2015– | **Assistant Teaching Professor**, Arizona State University, USA |
| 2012–14 | **Research Assistant**, Arizona State University, USA |
| 2012–14 | **Teaching Assistant**, Arizona State University, USA |
| 2012, 14 | **Grader**, Arizona State University, USA |
| 2011 | **Undergraduate Researcher**, Arizona State University, USA |
| 2009 | **Mathematics Tutor**, Chandler-Gilbert Community College, USA |
| 2007–08 | **Student Worker**, Chandler-Gilbert Community College, USA |

## TEACHING EXPERIENCE

### Assistant Teaching Professor, Arizona State University, USA

| | |
|---|---|
| 1 section | CSE240: Introduction to Programming Languages (Online) |
| 1 section | SER200: Core Data Structures w/OOP (Ground) |
| 3 sections | SER200: Core Data Structures w/OOP (Online) |
| 14 sections | SER222: Data Structures and Algorithms (Ground) |
| 15 sections | SER222: Data Structures and Algorithms (Online) |
| 2 section | SER315: Software Enterprise I: Design and Process (Ground) |
| 2 section | SER315: Software Enterprise I: Design and Process (Online) |
| 10 sections | SER334: Operating Systems and Networks (Ground) |

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| 7 sections | SER334: Operating Systems and Networks (Online) |
| 1 section | SER401: Computing Capstone II (Online) |
| 1 section | SER402: Computing Capstone II (Online) |
| 1 section | SER494: Data Science for Software Engineers (Ground) |
| 1 section | SER594: Data Science for Software Engineers (Ground) |

### Teaching Assistant (Instructor), Arizona State University, USA

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| Spring 2014 | CSE240: Introduction to Programming Languages |

### Teaching Assistant, Arizona State University, USA

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|---|---|
| Fall 2013 | CSE240: Introduction to Programming Languages (two sections) |
| Spring 2013 | CSE240: Introduction to Programming Languages (two sections) |
| Fall 2012 | CSE240: Introduction to Programming Languages |
| Spring 2012 | CSE240: Introduction to Programming Languages |

### Research Assistant, Arizona State University, USA

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|---|---|
| Spring 2015 | Mentor for School of Life Sciences Undergraduate Research |
| | Abigail Beebe |
| Fall 2014 | Mentor for School of Life Sciences Undergraduate Research |
| | Nicole Avila |
| Spring 2014 | Mentor for Fulton Undergraduate Research Initiative |
| | Giresse Tchegho, Ce Cheng |

### Undergraduate Teaching Assistant, Arizona State University, USA

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|---|---|
| Spring 2011 | CSE100: Principles of Programming with C++ |

### Tutor, Chandler-Gilbert Community College, USA

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| Spring 2009 | Mathematics Learning Center |
| 2007-08 | Instructional Computing Center |

## COURSE DEVELOPMENTS

### Assistant Teaching Professor, Arizona State University, USA

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|---|---|
| Fall 2022 | SER494/594: Data Science for Software Engineers (new) |
| Spring 2017 | SER334: Operating Systems & Networks (new) |
| Fall 2015 | SER222: Design & Analysis: Data Structures & Algorithms (replacement) |

## ONLINE COURSE DEVELOPMENTS

### Assistant Teaching Professor, Arizona State University, USA

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|---|---|
| Spring 2021 | CSE240: Introduction to Programming Languages (refresh; joint) |
| Spring 2016 | CST200: Core Data Strs w/OOP (new) |
| Fall 2016 | SER200: Core Data Strs w/OOP (new) |

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| Summer 2018 | SER222: Design & Analysis: Data Structures & Algorithms (refresh) |
| Spring 2016 | SER222: Design & Analysis: Data Structures & Algorithms (new) |
| Spring 2018 | SER315: Software Enterprise: Design & Process (new) |
| Spring 2017 | SER334: Operating Systems & Networks (new) |
| Fall 2017 | SER401: Computing Capstone I (new; joint) |
| Spring 2018 | SER402: Computing Capstone II (new; joint) |

## UNDERGRADUATE ADVISING

### Assistant Teaching Professor, Arizona State University, USA

| | |
|---|---|
| AY 2022–23 | Nicola Cereghini |
| | Barrett Honors Thesis: Transformers: A Survey and Application of a Popular Machine Learning Model |
| AY 2022–23 | Charles Jeffries |
| | Barrett Honors Thesis: An Evaluation of the Different Methods of Removing Satellite Artifacts from Astrometric Data |
| AY 2022–23 | Oluwamayowa Esan |
| | Barrett Honors Thesis: A Software-Based Solution for Mapping Product Locations in Stores |
| AY 2021–22 | Jacob Hreshchyshyn |
| | Barrett Honors Thesis: Deconstructive Geometry Workflow |
| AY 2018–19 | Logan Haser |
| | Barrett Honors Thesis: Priming Japanese Language Learners |
| AY 2017–18 | Derek Koleber |
| | Barrett Honors Thesis: Reinforcement Learning for Goal Dependency |
| AY 2017–18 | Bryce Beagle |
| | Barrett Honors Thesis: Idiotic - Home IoT Platform |

## UNIVERSITY ACTIVITIES

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|---|---|
| AY17– | Undergraduate Program Committee Chair |
| AY17– | Scholarship Reviewer for Software Engineering |
| AY21– | FSE Academic Integrity Committee Member |
| AY19–20 | Transfer Courses (ACETS) Reviewer for Software Engineering |
| AY16– | Faculty Advisor for CodeDevils Club – ASU Online |
| AY15– | Honors Faculty |
| AY20– | Support Workshops for UASP |
| AY15–17 | Undergraduate Program Committee Member |

# PUBLICATIONS

## Journals

2020   K Gary, **R Acuña**, A Mehlhase, R Heinrichs, S Sohoni. Scaling to Meet the Online Demand in Software Engineering. International Journal on Innovations in Online Education, 2020, 4(1).

2018   P M Rodriguez, D Stratmann, E Duprat, N Papandreou, **R Acuña**, Z Lacroix, and J Chomilier. Correlating topology and thermodynamics to predict protein structure sensitivity to point mutations. Bio-Algorithms and Med-Systems 14 (3), 2018.

2015   **R Acuña**, J Chomilier, and Z Lacroix. Managing and Documenting Legacy Scientific Workflows. Journal of Integrative Bioinformatics (JIB), Informations management in der Biotechnologie (IMBio) e.V., Volume 12(3):277 (DOI: 10.2390/biecoll-jib-2015-277).

2014   **R Acuña**, Z Lacroix, N Papandreou, and J Chomilier. Protein intrachain contact prediction with most interacting residues (MIR). Bio-Algorithms and Med-Systems 10 (4), 227-242.

## Conferences

2021   **R Acuña**, A Bansal. Using Programming Autograder Formative Data to Understand Student Growth. IEEE Frontiers in Education Conference (FIE), 2022, pp. 1-8.

2021   **R Acuña**, A Bansal. SimInt: A Structured Experience to Develop Mature Engineering Mindset. IEEE Frontiers in Education Conference (FIE), 2021, pp. 1-5.

2021   **R Acuña**, A Bansal. Leveraging the ADJ framework to Improve Real-World Problem-Solving Skills in Computing Courses. 26th ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE), 2021, pp 39–45.

2021   **R Acuña**, A Bansal. Analysis-Design-Justification (ADJ): A Framework to Develop Problem-Solving Skills. 2021 IEEE Global Engineering Education Conference (EDUCON), 2021, pp 366–372.

2016   **R Acuña**, and Z Lacroix. Extracting Semantics from Legacy Scientific Workflows. 10th IEEE International Conference on Semantic Computing (ICSC), Laguna Hills, California, USA, February 3 - February 5 2016, pp 9-16.

2015   **R Acuña**, R Bazzi, and Z Lacroix. Instrumentation and Trace Analysis for Ad-hoc Python Workflows in Cloud Environments. 8th IEEE International Conference on Cloud Computing (CLOUD), New York City, New York, USA, June 27- July 2 2015, published by IEEE (ISBN 978-1-4673-7286-2), pp 114-121.

2013    **R Acuña**, Z Lacroix, and J Chomilier. A Workflow for the Prediction of the Effects of Residue Substitution on Protein Stability. 8th IAPR international conference on Pattern Recognition in Bioinformatics (PRIB). Nice, France, June 17-20, 2013 – published by Springer-Verlag in the Lecture Notes in Computer Science (LNCS) series, Vol. 7986 (ISBN 978-3-642-27391-9), pp 253-264.

2012    **R Acuña**, Z Lacroix, and J Chomilier. Refurbishing Legacy Biological Workflows. 6th IEEE International Workshop on Scientific Workflows (SWF), Honolulu, Hawaii, USA, June 24-29 2012, published by IEEE (ISBN 978-1-4673-3053-4), pp 41-49.

2012    **R Acuña**, Z Lacroix, F Hadji, J Chomilier, and N Papandreou. Prediction of Chimeric Protein Fold. 3rd International Conference on Bioinformatics Models, Methods and Algorithms (BIOINFORMATICS 2012), Vilamoura, Algarve, Portugal, 1-4 February, 2012, SciTePress 2012 (ISBN 978-989-8425-90-4), pp 234-239.

## Book Chapters

2015    **R Acuña**, Z Lacroix, J Chomilier, and N Papandreou, Chapter 24 - SMIR: A Web Server to Predict Residues Involved in the Protein Folding Core, In Emerging Trends in Computer Science and Applied Computing, edited by Quoc Nam Tran, Hamid Arabnia, Morgan Kaufmann, Boston, 2015, Pages 437-454, Emerging Trends in Computational Biology, Bioinformatics, and Systems Biology, ISBN 9780128025086, http://dx.doi.org/10.1016/B978-0-12-802508-6.00024-7.

## Posters

2014    **R Acuña**, Z Lacroix, J Chomilier, and N Papandreou. SMIR: a method to predict the residues involved in the core of a protein. European Conference on Computational Biology 2014, Strasbourg, France, Sep 2014.

2014    **R Acuña**, Z Lacroix, and J Chomilier. SPROUTS 2.0: a database and workflow to predict protein stability upon point mutation. European Conference on Computational Biology 2014, Strasbourg, France, Sep 2014.

2012    **R Acuña**, Z Lacroix, and J Chomilier. The SPROUTS Submission Workflow. 13émes Journées Ouvertes Biologie Informatique Mathématiques (JOBIM), Rennes, France, Jul 2012.

2011    **R Acuña**, K Dyson, J Flay, D Garry, M Grade, A Markus, R Muller, N Patel, K Standage-Beier, E Ward, and X Wang. CRISPR-Assisted Genetic Engineering. iGEM 2011 Jamboree, Indianapolis, USA, Oct 2011.

2011    **R Acuña**, R Wheeler, R Herbzi, and P Stevens. Design and Implementation of a Graph Database for the Visualization and Comparison of Gene Regulatory Networks. ASU Senior Capstones, Tempe, USA, May 2011.

## Technical Reports

2011    S Nasser, A Ramesh, **R Acuña**, R Wheeler, R Herbzi, and P Stevens. Graph Databases for the Visualization and Analysis of Gene Regulatory Networks.

## INVITED TALKS

2013    June: invited talk at Pierre and Marie Curie University on Workflow for the Prediction of the Effects of Residue Substitution on Protein Stability, Paris, France.

2010    April: invited opening presentation at Chandler-Gilbert Community College for Emerging Science & Mathematics Scholar Program, Chandler, USA.

## INTERNET AND SOFTWARE

2015    **Workflow Instrumentation for Structural Analysis**, *Arizona State University*, USA
URL: TBD
Platform: Python
Role: Author

2015    **Structural Prediction for PRotein FOlding UTility System**, *Arizona State University*, USA
URL: http://sprouts.rpbs.univ-paris-diderot.fr/
Platform: Python, PHP, Javascript, MySQL
Role: Author

2014    **Smooth Most Interacting Residues**, *Arizona State University*, USA
URL: http://sprouts.rpbs.univ-paris-diderot.fr/mir.html
Platform: FORTRAN, Javascript
Role: Co-author

## AWARDS

2013    European Conference on Computational Biology 2013 Travel Support

2010–11    Stanley C. and Helen K. Delpier Scholarship

2009–11    ASU-MCCD Transfer Alliance Scholarship

2008–09    MCCD Chancellor's Scholarship

2007–09    CGCC Honors Program Scholarship

## HONORS

### Arizona State University

2010–11    Engineering Dean's List

2009–10    College of Liberal Arts & Sciences Dean's List

### Chandler-Gilbert Community College, AZ

2009    Social & Behavioral Sciences Outstanding Student

2008-09    Academic Excellence Award

2008-09    Emerging Science & Mathematics Scholar

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| 2008-09 | President's Honor List |

## PROFESSIONAL DEVELOPMENT

| | |
|---|---|
| 2019-present | PhD student in Computer Science |
| 2022 | Course: PSY 394 Positive Psychology** |
| 2022 | Course: PSY 434 Cognitive Psychology** |
| 2022 | Course: CAS 503 Fundamentals of Complex Systems Science: Collectives* |
| 2021-22 | Workshop: Engineering Unleashed - Story Makers AY21-22 |
| 2021 | Course: CSE 579 Knowledge Representation* |
| 2021 | Course: PSY 325 Biopsychology** |
| 2020-21 | Workshop: ASU FSE@EM REML Workshops AY20-21 |
| 2020 | ABET Basics of Program Assessment Planning |
| 2020 | Course: CSE 571 Artificial Intelligence* |
| 2020 | Course: CSE 535 Mobile Computing* |
| 2020 | Course: PSY 320 Learning and Motivation** |
| 2020 | Course: PSY 470 Psychopharmacology** |
| 2019-20 | Workshop: ASU FSE@EM KERN/KEEN Workshops AY19-20 |
| 2019 | Course: CSE 572 Data Mining* |
| 2019 | Course: PSY 324 Memory and Cognition** |
| 2019 | Course: SER 574 Advanced Software Design* |
| 2018 | Course: PSY 360 Cognitive Science** |
| 2018 | Course: CSE 569 Fundamentals of Statistical Learning* |
| 2017 | Course: CSE 575 Statistical Machine Learning** |
| 2016 | Course: AMT 533 Training Systems & Simulation* |
| | * Course (3 credits; 135 hours) taken for PhD requirements. |
| | ** Course (3 credits; 135 hours) taken for independent continuing education. |