

RICARDO GALLOPP R.

Ph.D. Candidate, Design, Construction, and Planning

M.E. Rinker, Sr. School of Construction Management, University of Florida

573 Newell Dr, Rinker Hall, Room 338, Gainesville, FL 32603, USA

(352) 256-0583 | rgalloppr@ufl.edu | ricardogallopp.com

ORCID: [0009-0000-4282-9288](https://orcid.org/0009-0000-4282-9288) | Google Scholar: [Ricardo Gallopp R.](https://scholar.google.com/citations?user=ricardogallopp)

EDUCATION

Doctor of Philosophy in Design, Construction, and Planning

2024 – Present

M.E. Rinker, Sr. School of Construction Management

University of Florida, Gainesville, FL, USA

- Dissertation Title: *“Standards-Aligned Specification-Driven Governance for Execution-Time Quality Assurance in Cyber-Physical Production Systems for Industrialized Construction”*
- Committee Members: *Raymond Issa (Chair, Construction Management); Aladdin Abvisy (Co-chair, Construction Management); Chimay Anumba (Dean, DCP); and Boji Hu (Industrial Engineering).*

Master of Science in Construction Management

2023 – 2025

M.E. Rinker, Sr. School of Construction Management

University of Florida, Gainesville, FL, USA

- Thesis Title: *“Framework for Integrating Digital Twins and Virtual Commissioning in Industrialized Construction Robotic Assembly”*
- Advisor: *Raymond Issa*

Bachelor of Science in Construction Engineering

2011 – 2014

College of Engineering

Andrés Bello University, Santiago, Chile

- Thesis Title: *“Pre-Feasibility Study for the Integration of an Aerial Ropeway in the Historic Center of Tegucigalpa, Honduras”*
- Advisor: *Nicolás Moreno Sepúlveda*

Bachelor of Science in Civil Engineering

2007 – 2013

College of Engineering

Central American Technological University

ACADEMIC PROFESSIONAL EXPERIENCE

Graduate Research and Teaching Assistant

2023 – Present

Center for Advanced Construction Information Modeling (CACIM)

M.E. Rinker, Sr. School of Construction Management

University of Florida, Gainesville, FL, USA

- Research Projects:
 - *“Industrialized Construction Engineering (ICE) research project”*
 - Funded by the UF Strategic Research Fund and Autodesk.
 - *“Digital Twins for Facility and Asset Management”*
 - A collaboration between the University of Florida and Autodesk.
 - *“Energy Conservation Features of New 2023 Homes in Florida”*
 - Funded by the Florida Concrete Products Association.
 - *“Evaluation of the Cost Impact and Benefit of 2024/ 2027 IBC Prescriptive Code Changes”*
 - Funded by the Florida Building Commission.
- Teaching Responsibilities:
 - Designed, developed, and delivered course content, including lectures, lab sessions, assignments, and exams; provided instruction and student support during class and office hours; and assessed student work for the following courses:
 - **BCN 5905: Special Studies in Construction — Advanced Construction Information Systems (Graduate Level | Fall 2025 – Present | 15+ students).**
Responsibilities: Instructed class sessions; guided students in software and digital workflows while resolving technical issues; and assisted with project deliverables. Held office hours and graded assignments and final projects.
Course description: This course covers BIM parametric modeling, reality computing workflows for data capture and transformation into operational digital twins, and BIM automation using the Revit API with pyRevit and

Revit MCP for AI-assisted workflows, and digital twin applications for facility management using Autodesk Tandem. Emphasis is placed on connected data environments such as Autodesk Construction Cloud, enabling integrated design-to-operations workflows within Industry 4.0.

Module development: BIM Automation using Python and the Revit API (pyRevit, Revit MCP).

- **BCN 6785: Construction Information Systems (Graduate Level | Spring 2025 | 20+ students).**
Responsibilities: Assisted in-class instruction by providing real-time software support and individualized troubleshooting during lecture-based software demonstrations; supported students in learning software and digital workflows; and assisted with project deliverables. Held office hours and graded assignments and final projects.
Course description: This course covers multidisciplinary BIM modeling (architectural, structural, and MEP) and Virtual Design and Construction workflows through 2D-to-BIM conversion, cloud-based collaboration in Autodesk Construction Cloud, and clash detection and coordination using Navisworks Manage. It includes 4D scheduling (CM Builder), 5D quantity takeoff (Revit), and visualization workflows (Twinmotion). Emphasis is placed on integrated project delivery, model federation, and real-world BIM applications through full BIM modeling of an existing project.
- **BCN 4905: Special Studies in Construction — Construction Information Systems (Undergraduate Level | Spring 2026 – Present | 10+ students).**
Responsibilities: Instructed class sessions; guided students in learning software and digital workflows while resolving technical issues; assisted with project deliverables. Held office hours and graded assignments and final projects.
Course description: This course, offered through the University of Florida Honors Program, covers multidisciplinary BIM modeling (architectural, structural, and mechanical) and Virtual Design and Construction workflows through 2D-to-BIM conversion, cloud-based collaboration in Autodesk Construction Cloud, and BIM automation using the Revit API with pyRevit and Revit MCP for AI-assisted workflows. Projects culminate in student-developed BIM automation workflows and custom pyRevit scripts applied to real-world project scenarios.
Module development: BIM Automation using Python and the Revit API (pyRevit, Revit MCP).

PATENTS & INVENTION DISCLOSURES

Lead Inventor. “Specification-Driven Governance Framework and Deterministic Conformance Mechanism for Cyber-Physical Production Systems in Industrialized Construction.” UF Invention Disclosure INV-260331 / T20292, University of Florida. Submitted to UF Innovate Tech Licensing; working prototype resubmission in progress.

PUBLICATIONS

Publication Summary						Citations ¹		
Refereed Journals		Refereed Conference Proceedings		Book Chapters		Google Scholar Citation		
<i>Published</i>	<i>Under Review/Prep</i>	<i>Published/In Press</i>	<i>Accepted</i>	<i>Published/In Press</i>	<i>Accepted</i>	<i>Citations</i>	<i>h-index</i>	<i>i10-index</i>
1	2	5	1	2	1	4	1	0

Journal Publications

- J1. **Ricardo Arturo Gallopp Ramírez**, Aladdin Alwisy, and Raja R. A. Issa (2026) “Specification-Driven Governance Framework and Data Contract Architecture for Execution-Time Quality Assurance in Cyber-Physical Production Systems” ***Under Preparation.***
- J2. **Ricardo Arturo Gallopp Ramírez**, Aladdin Alwisy, and Raja R. A. Issa (2026) “Context Resolution for Event-Driven Cyber-Physical Production Systems in Industrialized Construction” ***Under Preparation.***
- J3. **Ricardo Arturo Gallopp Ramírez**, Aladdin Alwisy, and Raja R. A. Issa (2026) “Semantic Interoperability Framework for Digital Twin-Based Virtual Commissioning of Robotic Assembly in Industrialized Construction” *Automation in Construction*. <https://doi.org/10.1016/j.autcon.2026.107095>

Conference Proceedings

- C1. **Ricardo Arturo Gallopp Ramírez**, Aladdin Alwisy, and Raja R. A. Issa (2026) “Production Context Resolution Framework for Production Events in Industrialized Construction Cyber-Physical Production Systems” *Proceedings of the International Conference on Industrialized Construction (ICoNIC 2026)*. ***In Press***
- C2. **Ricardo Arturo Gallopp Ramírez**, Aladdin Alwisy, and Raja R. A. Issa (2026) “Automated Asset Administration Shell Generation Framework for Robotic Assembly in Industrialized Construction” *Proceedings of the 22nd International Conference on*

Computing in Civil and Building Engineering (ICCCBE 2026). In Press

- C3. **Ricardo Arturo Gallopp Ramírez**, Isabelle Southern, Aladdin Alwisy, and Raja R. A. Issa (2026) “Conceptual Framework for Digital Twins and Virtual Commissioning in Industry 5.0 Industrialized Construction” *Proceedings Construction Research Congress* (CRC 2025), *the International Association for Automation and Robotics in Construction*. <https://doi.org/10.22260/CRC-CSCE-2025/0120>
- C4. **Ricardo Arturo Gallopp Ramírez**, Aladdin Alwisy, and Raja R. A. Issa (2026) “Framework for Leveraging Digital Twins and Cyber-Physical Production Systems in Robotic Assembly for Industrialized Construction” *The 2025 ASCE International Conference on Computing in Civil Engineering* (i3CE 2025). <https://doi.org/10.1061/9780784486443.069>
- C5. **Ricardo Arturo Gallopp Ramírez** and Raja R. A. Issa (2024) “Integrating Digital Twins and Web3 in Future Carbon Markets for Transparency: A New Framework Approach” *Proceedings of the 20th International Conference on Computing in Civil and Building Engineering* (ICCCBE 2024). https://doi.org/10.1007/978-3-031-84208-5_23
- C6. Isabelle Southern, **Ricardo Arturo Gallopp Ramírez**, Chady Elias, and Raja R. A. Issa (2024) “Digital Twin Framework for Integrating Machine Learning for Energy Consumption Prediction in the Built Environment” *Proceedings of the 41st International Conference of CIB W78* (CIB W78). <http://itc.scix.net/paper/w78-2024-117>

Book Chapters

- B1. **Ricardo Arturo Gallopp Ramírez**, Aladdin Alwisy, and Raja R. A. Issa (2027) “Context-Aware Digital Twin Architectures for Cyber-Physical Production Systems in Industrialized Construction” *Digital Twin for Cyber-Physical Systems: Integrating AI with an Engineering-Oriented Framework* (CRC Press, Taylor & Francis). ***Under Preparation.***
- B2. **Ricardo Arturo Gallopp Ramírez**, Aladdin Alwisy, and Raja R. A. Issa (2026) “Digital Twin-Enabled Virtual Commissioning in Robotics-Enabled Manufacturing and Assembly for Industrialized Construction” *Global Frontiers of Robotics in Construction, Civil Infrastructure, and the Built Environment* (ASCE). ***In Press***
- B3. **Ricardo Arturo Gallopp Ramírez**, Aladdin Alwisy, and Raja R. A. Issa (2026) “Framework for Leveraging Digital Twins and Cyber-Physical Production Systems in Robotic Assembly for Industrialized Construction”, *Computing in Civil Engineering 2025: Resilient, Robotic, and Educational Systems* (ASCE). <https://doi.org/10.1061/9780784486443.069>

INVITED TALKS AND PRESENTATIONS

Invited Talks

- T1. “University Peer Exchange” Autodesk Construction Cloud Build App Training Session, University of Florida, Gainesville, FL, January 30, 2025.
- T2. “Digital Twins for Smart Control of Supply Chain and Assembly-based Robotic Station in Industrialized Construction” Industrialized Construction Engineering (ICE) Research Workshop, University of Florida, Gainesville, FL, January 10, 2025.
- T3. “Digital Twins for Facility and Asset Management: A University of Florida and Autodesk Collaboration” Autodesk Executive Presentation, University of Florida, Gainesville, FL, January 23, 2024.
- T4. “Boosting Campus Operational Efficiency Through the Power of Autodesk Tandem Digital Twins” AU 2024 (Autodesk University), San Diego, CA, October 15, 2024.
- T5. “Building Information Modeling (BIM) Workshop (Spanish),” UPADI Latin American Presidents Visit, University of Florida, Gainesville, FL, June 28, 2023.

Conference Presentations

- CP1. “Production Context Resolution Framework for Production Events in Industrialized Construction Cyber-Physical Production Systems” *The International Conference on Industrialized Construction (IConIC 2026)*.
- CP2. “Automated Asset Administration Shell Generation Framework for Robotic Assembly in Industrialized Construction” *The International Conference on Computing in Civil and Building Engineering (ICCCBE 2026)*.
- CP3. “Conceptual Framework for Digital Twins and Virtual Commissioning in Industry 5.0 Industrialized Construction” *The Construction Research Congress* (CRC 2025).
- CP4. “Framework for Leveraging Digital Twins and Cyber-Physical Production Systems in Robotic Assembly for Industrialized Construction” *The 2025 ASCE International Conference on Computing in Civil Engineering* (i3CE 2025).
- CP5. “Integrating Digital Twins and Web3 in Future Carbon Markets for Transparency: A New Framework Approach” *The 20th International Conference on Computing in Civil and Building Engineering* (ICCCBE 2024).

Poster Presentations

- P1. “Blueprint for Digital Twin Implementation at UF Campus” *DCP Research Symposium 2023*, University of Florida, Gainesville, FL, November 8, 2023.
- P2. “Application of Digital Twins in Building Operation and Maintenance” *University of Florida Undergraduate Research Expo 2023*, University of Florida, Gainesville, FL, September 19, 2023.
- P3. “Cognitive Digital Twins in Building Operation and Maintenance” *University of Florida Artificial Intelligence Days 2023*. University of Florida, Gainesville, FL, October 18, 2023.

RESEARCH AND PROFESSIONAL MENTORING

Research Mentor

2026 – Present

Center for Advanced Construction Information Modeling (CACIM)

M.E. Rinker, Sr. School of Construction Management

University of Florida, Gainesville, FL, USA

- **Ajay Vangara**, 2026 – Present (Undergraduate student, University of Florida Honors Program; volunteer research assistant).
 - Advised and assisted in conducting a literature review for: “Context Resolution for Event-Driven Cyber-Physical Production Systems in Industrialized Construction”.

PROPOSAL WRITING

Assisted Dr. Raymond Issa in preparing the following proposals:

- P1. “*Semantic Interoperability Framework for Digital Twins in Industrialized Construction Production Systems*”
- Contributed to proposal development through literature review, preliminary research, and technical writing for a proposal submitted to the National Science Foundation (NSF)
- P2. “*Supervisory Governance for Execution-Time Conformance in Cyber-Physical Production Systems for Industrialized Construction*”
- Contributed to proposal development through literature review, preliminary research, and technical writing for a proposal submitted to the National Science Foundation (NSF)

CERTIFICATIONS

Certificates

- C1. Bridges & Structural Steel Design Courses Certification, University of Valencia.
- C2. Project Management & Building Inspection Certification, Chilean College of Engineers.
- C3. Fundamentals of Deep Learning, NVIDIA.
- C4. Autodesk Construction Cloud: Product Vision & Overview, Autodesk.
- C5. OSHA 30-Hour Construction, UL Solutions
- C6. Takeoff Data and Industry Workflows, Bluebeam
- C7. Project Manager (Core Tools), Procore

HONORS AND AWARDS

- A1. **Rinker Academic Excellence Award**, College of Design, Construction, and Planning, University of Florida, Spring 2025
- *This award recognizes graduate students who have shown outstanding academic performance, leadership, and commitment to the M.E. Rinker, Sr. School of Construction Management.*
- A2. **Induction into The Sigma Lambda Chi International Construction Honor Society**, 2024 – Present
- *International scholastic honor society that recognizes academic achievement among students in the field of construction management.*
- A3. **The Grinter Fellowship**, College of Design, Construction, and Planning, University of Florida, 2024 – Present
- *The Grinter Fellowship helps recruit truly exceptional PhD students entering the University of Florida, with funding provided for up to three academic years.*
- A4. **Certificate of Outstanding Merit**, University of Florida International Center, 2024
- *This award recognizes the exceptional contributions of international students to UF, where aspects of academic achievements and other ways in which these students have distinguished themselves and made a substantial impact are considered.*
- A5. **The Felix Scholarship**, College of Design, Construction, and Planning, University of Florida, Spring 2024
- *This scholarship provides support for graduate students who continuously achieve high academic standing.*

ACADEMIC SERVICE

Conference Reviewer

CIB W78 and buildingSMART International Summit

2024

Lab & Departmental Service

Web/Graphic Design, Center for Advanced Construction Information Modeling (CACIM)

2023 – Present

- Redesigned and updated the lab website, including a new home page, layouts, and content structure.
- Maintain the lab website, including blog updates, content management, and event documentation.
- Produce research illustrations and publication-quality figures for presentations and book chapters.

Volunteering

Graduate Student Volunteer, M.E. Rinker, Sr. School of Construction Management

2024

- *Assisted with departmental office relocation and facilities organization.*
- Volunteer, Working Food 2024
- *Assisted with community food access initiatives through the Giving Garden program.*
- Graduate Student Volunteer, M.E. Rinker, Sr. School of Construction Management 2023
- *Spanish interpretation for UPADI Pan-American Engineering Societies presidential delegation visit at the University of Florida.*

INDUSTRY PROFESSIONAL EXPERIENCE

Over thirteen years of cost estimating, preconstruction, and BIM/VDC project delivery across commercial, residential, and infrastructure projects in the United States, Honduras, Chile, and Guatemala — directly informing current research on industrialized construction and graduate instruction in construction information systems.

Cost Estimating, Project Management & Preconstruction Leadership

Cost Estimator 2023 – 2024

Project Cost Solutions
Atlanta, GA, USA

- Performed quantity takeoffs and cost estimates for \$50M+ public and airport-authority commercial projects; built API automations integrating ProEst and Power BI for real-time cost-data visualization.

Cost Estimator/Assistant Project Manager 2022 – 2023

Namnum Developers/Building Squad
North Miami, FL, USA

- Performed quantity takeoffs, estimates, schedules, BOMs, and bid packages; managed buyout, material procurement, subcontractor payments, and KPI reporting for the Divieto Restaurants and Canal Park projects.

Cost Estimator/BIM Specialist 2022 – 2023

Resonne Building & Development
Los Angeles, CA, USA

- Performed estimates, custom cost databases, and bid packages for residential projects; developed 3D models, permitting documentation, and renderings.

Cost Estimator/BIM Specialist 2019 – 2020

A-Rising Builders
Costa Mesa, CA, USA

- Performed estimates, custom cost databases, and bid packages for residential projects; developed 3D models, permitting documentation, and renderings.

Cost Estimator/Assistant Project Manager 2017 – 2019

Guptil Contracting
Plymouth, MN, USA

- Performed quantity takeoffs, estimates, BOMs, schedules, and bid packages for commercial and retail construction.

Project Engineer 2015 – 2016

Crowley Maritime (Diverse Engineering)
Puerto Barrios, Guatemala

- Managed project coordination, scheduling, quality control, safety, constructability, and material procurement.

Cost Estimator/Bid Manager 2014 – 2015

Ferrol Sports
Santiago, Chile

- Prepared complete competitive bid submissions for public sports infrastructure projects, including cost estimates, bid packages, schedules, risk analyses, and procurement documentation.

Project & QA/QC Engineer 2013 – 2014

Sagunto Developers
Santiago, Chile

- Performed QA/QC inspections, maintained project compliance documentation, and prepared progress payment applications for low-income housing projects.

Intern

2012 – 2013

BSA Cements & Concrete

Santiago, Chile

- Conducted statistical quality analyses across multiple concrete plants and provided technical support for concrete mix design and field operations.

Real Estate Development

Junior Development Partner/Preconstruction Manager

2015 – 2017

CONSASA (City of Hope)

Tegucigalpa, Honduras

- Oversaw CRE financial modeling, land acquisition, design, estimating, scheduling, permitting, and bidding for a 10,000+ unit low-income multi-family housing development.

Independent Consulting Practice

Founder/Principal

2019 – Present

Backmanage

- Delivered remote BIM-based consulting services for U.S. clients through distributed project teams, alongside residential construction execution in Honduras.

AFFILIATIONS

Student Member, American Society of Civil Engineers (ASCE)

- ASCE Construction Institute (CI)

Student Member, American Society for Engineering Education (ASEE)

Licensed Civil Engineer (No. 6140), Honduras Society of Civil Engineers (CICH)

TECHNICAL SKILLS

- **Digital Twins, Cyber-Physical Systems & Industrial Interoperability:** NVIDIA Omniverse (Isaac Sim), Autodesk Tandem, Autodesk Platform Services (APS), Eclipse BaSyx, Asset Administration Shell (AAS), OPC UA, MQTT, Microsoft Azure IoT, event-driven and agentic systems.
- **BIM & Virtual Design and Construction (VDC):** Autodesk Revit, Autodesk Construction Cloud, Autodesk Navisworks, Autodesk Inventor, Dynamo, pyRevit, Revit API, SketchUp, Enscape, Lumion, Twinmotion, model-based coordination, and construction simulation.
- **Industrial Automation & Robotics:** ABB RobotStudio (RAPID), TwinCAT, CODESYS, PLC/industrial automation systems, IEC 61131-3, ROS 2, robotic assembly, multi-robot coordination, physics-based simulation, and virtual commissioning.
- **Python, Software & Data Engineering:** Python, Pydantic, FastAPI, REST APIs, JSON/XML, SQL, asynchronous programming, pytest, Git/GitHub, Docker, Linux (Ubuntu/WSL), data pipelines, and engineering systems.
- **AI & Intelligent Engineering Systems:** Machine learning, deep learning, large language models (LLMs), agentic AI workflows, and AI-enabled engineering applications.
- **Construction Management & Analytics:** Oracle Primavera P6, Microsoft Project, Bluebeam Revu, Microsoft Excel (advanced modeling), Power BI, production planning, scheduling, and project controls.
- **Commercial Real Estate & Financial Modeling:** ARGUS Developer, development feasibility analysis, and financial modeling.

LANGUAGES

- **English:** Native-level proficiency
- **Spanish:** Native
- **French:** Limited working proficiency