

Milin Kodnongbua

<https://mkodnongbua.com>

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Education

- **University of Washington, Seattle** Seattle, Washington
Ph.D. in Computer Science Sep. 2022 - Jun. 2028
 - Advisor: Prof. Adriana Schulz at GRAIL
 - Research Interests: Computational Design and Fabrication. Optimization of 3D objects and CAD models for performance and usability metrics. Generation and manipulation of 3D objects using deep learning models and domain specific languages.
- **University of Washington, Seattle** Seattle, Washington
Bachelor of Science in Computer Science and Economics Sep. 2018 - Jun. 2022
 - GPA: 3.93/4.00 (Magna Cum Laude); Departmental Honors in Computer Science

Publications

- **Diceplay: A Modular Canvas for Physical Image Composition**
Milin Kodnongbua*, Zihan Zhang*, Shishi Xiao*, Vivian Li, Heather Robertson, Rulin Chen, David Laidlaw, Adriana Schulz. SIGGRAPH Asia 2026 Conference Papers.
- **Design for Descent: What Makes a Shape Grammar Easy to Optimize?**
Milin Kodnongbua*, Zihan Zhang*, Nicholas Sharp, Adriana Schulz. SIGGRAPH Asia 2025 Conference Papers.
- **Computational Design of Dense Servers for Immersion Cooling**
Milin Kodnongbua, Zachary Enghardt, Ricardo Bianchini, Rodrigo Fonseca, Alvin Lebeck, Daniel S. Berger, Vikram Iyer, Fiodar Kazhamiaka, Adriana Schulz. ACM Transactions on Graphics (SIGGRAPH Asia 2024).
- **ReparamCAD: Zero-shot CAD Program Re-Parameterization for Interactive Manipulation**
Milin Kodnongbua*, Benjamin Jones, Maaz Ahmad, Vladimir Kim, Adriana Schulz. SIGGRAPH Asia 2023 Conference Papers.
- **B-rep Matching for Collaborating Across CAD systems**
Benjamin Jones*, James Noeckel*, **Milin Kodnongbua***, Illya Baran, Adriana Schulz. ACM Transactions on Graphics, 42(4) (SIGGRAPH 2023).
- **Self-Supervised Representation Learning for CAD**
Benjamin Jones, Michael Hu, **Milin Kodnongbua**, Vladimir Kim, Adriana Schulz. CVPR 2023.
- **Computational Design of Passive Grippers**
Milin Kodnongbua, Ian Good, Yu Lou, Jeffrey Lipton, Adriana Schulz. ACM Transactions on Graphics, 41(4) (SIGGRAPH 2022).

Experience

- **Adobe** Seattle, Washington
Research Intern Jun. 2026 - Sep. 2026
 - **Automatic Resize of Adobe Express Templates**: Adobe Express offers a large collection of artist-made templates. These templates are authored for a specific size. We developed a neuro-symbolic approach that discovers the document structure and automatically relays elements in the documents while preserving the content, reading order, and style.
- **Microsoft** Redmond, Washington
Research Intern Jun. 2023 - Sep. 2023
 - **Dense Server Design for Immersive Cooling**: Immersive cooling technology imposes less demanding thermal constraints and allows for more flexible designs. We developed an algorithm that explores server designs in 3D space and optimizes for density. The optimized design would help reduce the overhead cost of cooling and maintaining. We formulate the problem as a mixed integer linear program (MILP) and use genetic algorithms to help with scalability.
- **University of Washington** Seattle, Washington
Research and Teaching Assistant Apr. 2020 - Jun. 2022
 - **Research Assistant – Computational Design of Passive Grippers**: Developed an algorithm to design a 3D printable passive gripper and find a valid robot trajectory to grab any given object. Our project enables assembly lines to quickly and easily be re-purposed to produce new products in need. Project site: <https://homes.cs.washington.edu/~milink/passive-gripper/>

- **Research Assistant – Knitting Simulation:** Implemented a knitted cloth simulator in C++, which is typically used in animations and games. The simulator works at the yarn level, providing matching results with real knitted clothes. Implemented a conversion pipeline for transforming a 3D stitch mesh model to a collection of yarn curves to be used with the cloth simulator.
- **Teaching Assistant - Computer Graphics:** (3 quarters). Ported course project from C++ to Unity and C#, and re-wrote project description. Tutored students, held office hours, graded homework assignments and projects.
- **Teaching Assistant - Introduction to Computer Networks:** (3 quarters). Tutored students, held office hours, graded homework assignments and projects.

Honors

- **Honorable Mention**, ICPC World Finals 2023 Apr. 2024
- **10th Place**, ICPC North America Championship 2022 Mar. 2022
- **1st Place**, ICPC Pacific Northwest Regional 2021 Mar. 2022
- **4th Place**, ICPC Pacific Northwest Regional 2020 Mar. 2021
- **4th Place**, ICPC Pacific Northwest Regional 2019 Nov. 2019
- **9th Place**, ICPC Pacific Northwest Regional 2018 Nov. 2018
- **Bronze Medal**, International Olympiad in Informatics 2018 Sep. 2018
- **Bronze Medal**, Asia-Pacific Informatics Olympiad 2018 May. 2018

Projects

- **Jummify – Vocabulary Learning Site** Sep. 2024 - Present
Designed and implemented an online site for mastering vocabulary using space-repetition. The site uses NextJS and is available at <https://jummify.com>.
- **Emnote – Handwritten Note-taking Application** Sep. 2018 - Present
Designed and implemented a handwritten note-taking app for Windows, a OneNote alternative with pages and nice PDF imports. The app was implemented in C#, XAML, and UWP; and is available at <https://emnote.app> and at the Microsoft Store with 5,000+ downloads.
- **Loop Termination Branch Predictor for RISC-V Processor** Apr. 2021 - Jun. 2021
Implemented the Loop Termination Buffer and integrated with BlackParrot, an open source multicore RISC-V processor. The buffer correctly predicts the end of the inner for-loops with constant number of iterations and is able to improve the overall branch prediction accuracy.
- **5-Stage Pipelined RISC-V 32I Processor** Jan. 2021 - Mar. 2021
Implemented from scratch a 5-stage pipelined RISC-V 32I Processor in SystemVerilog. The implementation was tested on an FPGA and was able to run arbitrary C code compiled to RISC-V binaries.
- **Alumni Directory Website** Jun. 2020 - Dec. 2020
Designed and developed an alumni directory website for high school using React and Firebase. Alums can enter their education and career in the website. Current students can custom search alums with specific attributes that best suit their goals. The site is available at kvis-alumni.web.app.
- **Automatic Text Summarizer** Sep. 2016 - Nov. 2016
Developed a deep neural network model that automatically summarizes documents into a single paragraph using Python. The model uses features such as word frequency, position, and part of speech to determine the importance of a sentence. It helped screening research papers during my high school.

Skills

- **Languages:** C/C++, C#, Javascript, Typescript, Python, Java, HTML, CSS, Latex, SystemVerilog, R
- **Tools/Libraries:** Git, CMake, OpenMP, CGAL, Libigl, PyTorch, React, Jekyll, Firebase, Gurobi
- **General:** Algorithms, Data Structures, Web Programming, Deep Learning, Machine Learning, Large Language Model