(847) 287-6910
Morton Grove, IL
mercedes.sandu@u.northwestern.edu

# Mercedes Sandu
## Software Engineer

Portfolio: mercedessandu.com
github.com/mercedes-sandu
linkedin.com/in/mercedes-sandu

Creative and motivated software, web, and game developer seeking to apply knowledge from both startup and industry experiences toward a dynamic and detail-oriented frontend, full-stack, or design position.

## EDUCATION

**Master of Science**, *Northwestern University*                                      March 2022 — June 2024
*Computer Science, Thesis Track, GPA 4.0*
**Bachelor of Arts**, *Northwestern University*                                  September 2020 — June 2024
*Mathematics and Computer Science Double Major, Chemistry Minor, GPA 3.86*
**High School Diploma** *Niles North High School*                                    August 2016 — May 2020
*GPA 4.75*

## TECHNICAL EXPERIENCE

**LEAD FRONTEND ENGINEER / INTERVALLIC, SONGLYBOT, OVERTURE.GAMES**           **June 2022 — Present**
*Overture Games*                                                                   *Chicago, Illinois*

- Delivered and shipped Intervallic game on itch.io and Steam after just over a year of development
- Advised and guided team throughout the design and programming process of Intervallic using Unity and C#
- Delegated relevant tasks to team members with differentiated experience and roles on both development and art teams
- Fostered and led communication between the lead designer, the art team, and the development team
- Engineered and implemented primary game mechanics, including player movement, level progression, movement objects, accuracy detection, and Midi-to-game-object level generation
- Developed systems for Midi instrument, computer keyboard, and touchscreen input
- Built data structures to represent musical concepts such as key signatures, intervals, chromatic movement, and scales
- Led, designed, and programmed major UI/UX projects for visual aesthetic and frontend development of Intervallic game
- Developed SonglyBot, a Discord Python bot used to foster and engage with a community for the company through a Discord server allowing members to play fun minigames and have thoughtful conversations
- Developed and created content for Overture Games website using Svelte, TypeScript, HTML, and SCSS
- Designed and created in-game art for UI and other assets
- Conducted testing sessions for Intervallic game with hundreds of potential consumers and schools
- Mentored and pair programmed with new developers and artists joining the team during their onboarding
- Wrote technical and game design documentation for gameplay mechanics and systems developed using Confluence

**GRADUATE RESEARCHER / AI & NARRATIVE RESEARCH, IMAGINARIUM, CATSAT**        **March 2022 — Present**
*Northwestern University Computer Science Department*                               *Evanston, Illinois*

- Studied and documented the uses of propositional and formal logic in generative software and game artificial intelligence
- Analyzed Dr. Ian Horswill's experimental generative language, Imaginarium, with the intent to expand its logical implications
- Experimented with Imaginarium project and extended Imaginarium codebase to discover its technical and logical shortcomings and planned improvements
- Designed, implemented, and tested a constraint-based SAT solver for constraints imposed on randomly generated graphs, expanding upon Dr. Horswill's project, CatSAT
- Created and documented constraints to impose on graphs in CatSAT, such as connected graphs and connected nodes
- Utilized and implemented data structures such as UnionFind, spanning trees, graphs, and paths
- Visualized and verified test cases by writing code using C# testing libraries and creating Graphviz .dot files

**FRONTEND DEVELOPMENT IT INTERN / KNOWme**                                  **June 2023 — September 2023**
*Abbott*                                                                           *Chicago, Illinois*

- Designed and implemented components for ecommerce React webapp using TypeScript, HTML, and CSS
- Cleared backlog of ADA audits and documented changes and passing Lighthouse tests
- Updated webapp components to be accessible with AA-standard colors, tabbed navigation focus states, and accessibility labels
- Collaborated across multiple teams to develop different parts of the webapp: pre-purchase (product listings and pre-screening questions), post-purchase (test results), and component library
- Completed tasks in an agile sprint-based workflow
- Redesigned and implemented PowerBI dashboards and PowerApps using Figma for intern showcase project

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**UNDERGRADUATE RESEARCHER / DISCRETE GEOMETRY RESEARCH**                    **January 2021 — June 2023**
*Northwestern University Mathematics Department*                                      *Evanston, Illinois*

- Studied the previous work of Dr. Shuyi Weng and Dr. Laura DeMarco on the folding of two-dimensional polygons into three-dimensional shapes
- Conducted case studies on different shapes and used findings and implemented code to write formal proofs
- Wrote code in LaTeX and Mathematica to analyze case studies and create interactable figures
- Wrote a formal mathematics academic paper discussing main findings of research on polygons and three-dimensional shapes
- Published academic paper in *Involve Journal*, written with mentor
- Presented research findings to hundreds of educated enthusiasts at Northwestern University
- Presented research findings to undergraduate students, graduate students, and professors at national Joint Mathematics Meetings

## Skills

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|---|---|
| **Tools and Languages** | C#, Unity, Java, Python, HTML, CSS, TypeScript, React, Figma, LaTeX, Blender, Git, Discord API, Jira |
| **Quantitative Research** | Proof Writing, Discrete Geometry, Artificial Intelligence, Logic, Mathematica, MatLab |
| **Communication** | English, Romanian, Spanish |

## Awards, Presentations, & Publications

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|---|---|
| *Intervallic*, Steam and itch.io | October 2023 |
| *Closed cap condition under the cap construction algorithm*, Involve Journal | June 2023 |
| Joint Mathematics Meetings Undergraduate Oral Presentation | January 2023 |
| Financial Award for The Garage Jumpstart Competition Finalist | August 2022 |
| Summer Undergraduate Research Grant | Summer 2022 |
| Undergraduate Research Exposition Presentation | May 2021 |
| Northwestern Undergraduate Mathematical Society Presentation | May 2021 |
| Dean's List | Winter 2023, Fall 2022, Spring 2022, Winter 2022, Fall 2021, Winter 2021, Fall 2020 |