(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 startup experience 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*

- Advised and guided team throughout the design and programming process of Intervallic game using Unity and C#
- Delegated relevant tasks to team members on both development and art teams with differentiated experience and roles
- 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 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
- 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 to create 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 tests), 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

(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

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 LaTeXand 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

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

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	Nay 2021
Dean's List	Winter 2023, Fall 2022, Spring 2022, Winter 2022, Fall 2021, Winter 2021, Fall 2020