

# NGU DANG

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SUMMARY	I am a fifth-year Ph.D. candidate in Computer Science. I am interested in Complexity Theory and Algorithm Designs, particularly the hardness and lower bounds of natural computational problems. During my undergraduate studies, I did some research on Computer Vision. I occasionally did individual machine learning-related projects for personal enrichment.	
EDUCATION	<b>Department of Computer Science, Boston University</b> <i>Ph.D. in Computer Science</i> • Advisor: Prof. Steven Homer • Research area: Circuit Complexity and The Minimum Circuit Size Problem (MCSP) • GPA: 3.93/4.00	Boston, MA 2020 - 2026 ( <i>expected</i> )
	<b>Department of Computer Science, Clark University</b> <i>B.A. in Computer Science</i> • Minors: Data Science and Mathematics • GPA: 3.93/4.00 — Graduated with Summa Cum Laude and High Honors • First Honors Dean's List in 2018, 2019, and 2020.	Worcester, MA 2018 - 2020
PUBLICATIONS & MANUSCRIPTS	<ol style="list-style-type: none"><li>1. Marco Carmosino, <b>Ngu Dang</b>, Tim Jackman. <b>Finding Circuit Extensions For XOR in Polynomial Time</b>. 2024. <i>Symposium On Theory of Computing 2025 (STOC' 25)</i>. Under Submission.</li><li>2. Marco Carmosino, <b>Ngu Dang</b>, Tim Jackman. 2023. <b>Minimal XOR Circuits: The One True Shape is a Binary Tree</b>. Unpublished Manuscript. This work was integrated with <i>Finding Circuit Extensions For XOR in Polynomial Time</i> above. A set of slides presenting this work can be found <a href="#">here</a>.</li><li>3. Mariah Papy, Duncan Calder, <b>Ngu Dang</b>, Aidan McLaughlin, Breanna Desrochers, and John Magee. 2019. <b>Simulation of Motor Impairment with “Reversed Angle Mouse” in Head-Controlled Pointer Fitts’s Law Task</b>. In <i>Proceedings of the 21st International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '19)</i>; ACM, Pittsburgh, PA, USA. DOI</li></ol>	
TEACHING EXPERIENCE	<b>Teaching Fellow</b>   Boston University • CS131: Combinatorics Structures — Summer 2022, 2023 • CS132: Geometric Algorithms — Summer 2022 • CS235: Algebraic Algorithms — Spring 2021 • CS237: Probability in Computing — Summer 2024 • CS332: Theory of Computation — Spring 2023, Fall 2023, 2024 • CS630: Advanced Algorithms — Fall 2021	2021 - present
	<b>Grader</b>   Boston University • CS535: Complexity Theory — Fall 2023	2023 - present
	<b>Undergraduate Teaching Assistant</b>   Clark University • CS120: Introduction to Computer Science — Fall 2018 • CS121: Data Structures — Spring 2019 • CS180: Automata Theory — Fall 2019	2018 - 2019

PROJECTS	<b>Edible Mushroom Classifier</b> <i>. Kaggle's Challenge — Github Link</i> 07.2024 - 08.2024 <ul style="list-style-type: none"> <li>Implemented a Random Forest model in Python that classifies edible mushrooms from toxic ones based on physical characteristics.</li> <li>The dataset used in this project (train and test) was generated from a deep learning model trained on the UCI Mushroom dataset. The training set contains 3116945 data points; the test set contains 2077964 data points, with 22 features.</li> <li>The model achieved an accuracy score of 0.987 on the hidden test set.</li> </ul>
	<b>Disaster Tweets Classifier</b> <i>. Kaggle's Challenge — Github Link</i> 04.2024 - 05.2024 <ul style="list-style-type: none"> <li>Implemented a model classifying disastrous Tweets from regular ones in Python using DistilBERT by HuggingFace, which was trained on over 7000 tweets.</li> <li>The model achieved an accuracy score of 0.818 on the hidden test set.</li> </ul>
	<b>Digit Recognizer</b> <i>. Kaggle's Challenge — Github Link</i> 10.2023 - 11.2023 <ul style="list-style-type: none"> <li>Implemented a Digit Recognizer model in Python using a Convolutional Neural Network (CNN), which was trained on the MNIST dataset.</li> <li>The model achieved an accuracy score of 0.988 on the hidden test set.</li> </ul>
	<b>House Price Predictor</b> <i>. Kaggle's Challenge — Github Link</i> 07.2022 - 08.2022 <ul style="list-style-type: none"> <li>Implemented a House Price predictor model using CatBoost Regression in Python where the data contains 2919 entries, each with 79 explanatory features describing most aspects of residential homes in Ames, Iowa.</li> <li>The model achieved an RMSE score of 0.13 on the hidden test set.</li> </ul>
PAST EXPERIENCE	<b>Undergraduate Research Assistant</b>   Worcester, MA 05.2019 - 05.2020 <ul style="list-style-type: none"> <li>Contributed to computer vision and computational geometry research projects in the Computer Science Department.</li> <li>Implemented experiments, statistical analysis, visualization, and geometrical simulations in Python and Java.</li> </ul>
	<b>CMS Assistant</b>   Worcester, MA 04.2018 - 08.2018 <ul style="list-style-type: none"> <li>Participated in building Clark University's new website on WordPress with the University's Marketing Department.</li> <li>Fixed 300 broken links as they were encountered and edited contents as needed.</li> <li>Handled tickets from other departments in the university that resolved their problems with accessing new website features.</li> </ul>
SKILLS	<b>Programming:</b> Python, Java, C, C++, MySQL, MATLAB. <b>Libraries:</b> Pandas, Numpy, Tensorflow, PyTorch, Natural Language Toolkit (NLTK), Scikit-Learn, Seaborn <b>Tools:</b> Git, Jupyter, Google Colab, Visual Studio, Microsoft Office Suite <b>Scripting:</b> LaTeX, HTML, CSS <b>OS:</b> Windows, Linux <b>Languages:</b> English (fluent), Vietnamese (native).

AWARDS  
AND  
HONORS

- **Outstanding Academic Achievements**, awarded by the Department of Computer Science at Clark University.
- **Inducted to Phi Beta Kappa**, Lambda of Massachusetts at Clark University on 05.24.2020

ACADEMIC  
SERVICES

**Reviewer for:** *Journal of Computer and System Science (JCSS)*

**Organizer for:** *Boston University Computer Science's Theory Seminar (Spring 2021)*

**Vice President for:** *Clark University Computer Science's Competitive Programming Club*