CHAEWAN CHUN

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Projects

Conversational Audio Fact-Checking & Spoken-Media Integrity Jan 2025 – Present
Pennsylvania State University

- Developed MAD/MAD2, the first conversational audio fact-checking benchmarks (1,000 dialogues; 3,368 check-worthy claims; ∼10h aligned audio), enabling rigorous evaluation of multi-turn spoken claims beyond isolated text settings.
- Engineered an end-to-end pipeline transforming seed claims into claim-aligned spoken dialogues via LLM-based dialogue synthesis, WhisperX timestamp grounding, and MoonCast speech synthesis.
- Designed context-controlled evaluation regimes, facilitating a realistic assessment of how conversational context and modality choices impact verification accuracy.

Amazon Nova AI Challenge 2026 Feb 2026 – Present
Amazon & Pennsylvania State University

- Selected as a member of a global top-10 university team for the 2026 Amazon Nova AI Challenge — Trusted Software Agents track, a competitive international AI competition focused on building and evaluating secure, agentic AI systems using Nova Forge.

Computational Brushstroke Analysis & Feature Engineering Aug 2022 – Dec 2024
Pennsylvania State University

- Developed a framework to quantify artistic style by extracting brushstroke *flow* via structure-tensor fields and streamline tracing, transforming static image patches into computational representations of dynamic movement.
- Engineered high-dimensional distributional feature sets (e.g., curvature smoothness, directional variability, and segment length) to characterize the gestural expressiveness of Claude Monet's paintings.
- Integrated these geometric features into a novel C2A (Composition to Attribute) deep neural network, enabling the first systematic classification of "abstract" vs. "non-abstract" brushwork with strong performance (mean accuracy ≈0.91 under LOPO-CV).

3D Motion Dynamics & Behavioral Analysis Framework May 2023 – Dec 2024
Pennsylvania State University

- Developed a 3D pose-based time-series clustering framework to quantify motion dynamics from video clips, investigating the correlation between physical movement patterns and emotional states.
- Engineered an Active Learning pipeline featuring model-based uncertainty sampling to prioritize rare emotion classes (e.g., disgust) for expert annotation, significantly reducing labeling costs while enhancing model robustness against class imbalance.

Heatmap-Guided Training for Robust Image Classification May 2021 – May 2022
Pennsylvania State University

- Engineered a Saliency-based Learning (SL) protocol that preserves the top 15% most important pixels (from explanation heatmaps) while blurring the remainder, encouraging CNNs (ResNet, VGG) to rely on semantically relevant structure rather than spurious background cues.
- Demonstrated improved adversarial robustness under FGSM and NewtonFool and surfaced an adaptive threat insight: defense efficacy is highly sensitive to perturbation order, with accuracy holding when heatmap-blur is applied after an attack but dropping when blur precedes an adaptive attack.

Volvo Trucks – Fuel-Efficiency Prediction & Configuration Insights Aug – Dec 2021
Pennsylvania State University

- Prepared and modeled a high-dimensional fleet dataset (181,805 vehicles × 145 features) to predict fuel efficiency from truck configuration and operational attributes.

- Translated model feature effects into three configuration recommendations for improving customer fuel efficiency, delivered to Volvo stakeholders.

Education

The Pennsylvania State University *University Park, PA* — Aug 2022 – Present
Ph.D. candidate in **Informatics** | Advisor: Dr. Dongwon Lee — GPA: 3.94/4.0

The Pennsylvania State University, *University Park, PA* — Aug 2018 – May 2022
Schreyer Honors College, Dean's List (every semester) — GPA: 3.91/4.0
B.S. in **Computer Science**, *Magna Cum Laude* | B.S. in **Mathematics**, *Cum Laude* | Minor: **Statistics**
Honors Thesis: Robust Image Classification based on Pixel Importance (Advisor: Dr. Jia Li).

Publications

Chaewan Chun, Delvin Ce Zhang, and Dongwon Lee. "Listening for Lies: Context-Sensitive Claim Verification in Spoken Dialogues." *Interspeech*, **Under Review**, 2026.

Meruyert Aristombayeva, Jason Lucas, **Chaewan Chun**, and Dongwon Lee. "Detecting Spoken Hallucinations Across Three Languages: Generation, Challenges, and Insights from Audio Data." *Interspeech*, **Under Review**, 2026.

Chaewan Chun, Delvin Ce Zhang, and Dongwon Lee. "When Misinformation Speaks and Converses: Rethinking Fact-Checking in Audio Platforms." *Proceedings of the 64th Annual Meeting of the Association for Computational Linguistics (ACL)*, Accepted, 2026.

Lizhen Zhu, **Chaewan Chun**, Kathryn Brown and James Z. Wang, "Mapping the Flow of Painterly Gesture." *Patterns*, vol. 7, no. 3, article 101516, pp. 1-5, Published, 2026.

Li, Jia, **Chaewan Chun**, Kathryn Brown, and James Z. Wang. "Computational Investigation of Abstraction in Claude Monet's Water Lilies through Brushstroke Analysis." *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Published, 2026.

Chaewan Chun, Lysandre Terrisse, Delvin Ce Zhang, and Dongwon Lee. "MAD: A Benchmark for Multi-Turn Audio Dialogue Fact-Checking." *International Conference on Social Computing, Behavioral-Cultural Modeling & Prediction and Behavior Representation in Modeling and Simulation (SBP-BRiMS)*, Accepted as working paper, 2025.

Awards & Grants

Fund for Excellence in Graduate Recruitment Award, *academic achievement, Penn State* — Jun 2022
Paul MacDonald Open Doors Scholarship, *leadership and academic achievement, Penn State* — Nov 2021
Leadership Scholarship, *leadership engagement in Women in Engineering, Penn State* — May 2021
Student Engagement Network Innovation Grant, *summer research, Penn State* — Apr 2021
Evan Pugh Scholar Award, *academic achievement, Penn State* — Apr 2020

Others

Leadership: Teaching Assistant, Interdisciplinary Research Design for IST (IST 501) | Learning Assistant, Programming Language Concepts (CMPSC 461) | Administrative Assistant - data analytics | Engineering Orientation Network Leader/Mentor | Penn State Peer Mentor Collective | Facilitated Study Group Coordinator, Women in Engineering.

Posters: MASC–SLL Symposium 2025 | SBP–BRiMS 2025.