

# Beichen Xue

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## RESEARCH INTERESTS

My research interests lie in human-centered HCI, with a focus on understanding the explicit and implicit impacts that human-AI interactions have on humans. I am particularly interested in applying insights from cognitive psychology to design systems that facilitate natural behavioral change and personal growth.

## EDUCATION

<b>National University of Singapore</b> <b>Bachelor of Science in Data Science and Analytics, Minor in Computer Science (GPA: 4.35/5)</b> <ul style="list-style-type: none"><li>Expected Date of Graduation: June 2025</li><li>Relevant Courses: CS3244 Machine Learning, PL3103 Cognitive Psychology</li></ul>	<b>Aug 2021 – Present</b>
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## EXPERIENCES

<b>Human Computer Interaction Part-Time Research Intern, NUS School of Computing</b> <ul style="list-style-type: none"><li>Designed experiments on exploring how AI confidence levels expressed through natural language impact human confidence in decision making context. Investigated verbal and cognitive alignment between human and AI, with a focus on lasting effects across tasks.</li><li>Designed EEG-based experiment to assess cognitive states of human confidence before and after decision-making.</li><li>Explored social influence of AI through contagion and conformity in interactions with humans.</li></ul>	<b>Oct 2024 – Present</b>
<b>Machine Learning Part-Time Research Intern, NUS Department of Mathematics</b> <ul style="list-style-type: none"><li>Conducted mathematical analysis on self-attention mechanisms, applying nonlocal methods to optimize graph-based diffuse interface functionality.</li><li>Developed task-specific transformers utilizing image deconvolution techniques, enhancing model denoising capabilities.</li></ul>	<b>July 2023 – Dec 2023</b>
<b>Machine Learning Summer Research Intern, NUS Department of Mathematics</b> <ul style="list-style-type: none"><li>Mathematically established that incorporating layer-wise nonlinear activation into stacked state-space models improves their ability to approximate complex sequence-to-sequence relationship.</li><li>Demonstrate the exponential memory decay of state-space models through theoretical and empirical analysis.</li></ul>	<b>April 2023– June 2023</b>
<b>Machine Learning Intern, Amaris.AI</b> <ul style="list-style-type: none"><li>Conducted a detailed evaluation of a T5 transformer model for question generation, analysing its strengths and limitations.</li></ul>	<b>May 2022 – July 2022</b>

- Investigated application of Knowledge Graph Ontology to enhance generation of abstract and templated questions, improving model's ability to create varied and contextually relevant outputs.

## PUBLICATIONS

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- [We Shape AI, and Thereafter AI Shape Us: Humans Align with AI through Social Influences, ICLR 2025 Workshop & CHI 2025 SIG](#)
- [State-Space Models With Layer-Wise Nonlinearity Are Universal Approximators With Exponential Decaying Memory, NeurIPS 2023](#)

## SKILLS

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- Machine Learning/Deep Learning: PyTorch-Transformers, Graph Learning, Natural Language Processing
- System Development: Full-Stack (Frontend + ML-based backend) interactive system development
- Physiological Signals: EEG Signal collection and processing
- Database: PostgreSQL (PL/pgSQL)