Bich Ngoc (Rubi) Doan

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WORK EXPERIENCE

Visiting Researcher **Oct 2025 – Present**
Social AI Studio @SUTD, Microsoft Research and GovTech *Singapore*

- Built **large-scale evaluation pipelines** to audit demographic bias in LLM-based resume screening under anonymisation, in collaboration with GovTech
- Generated 4,100 controlled resume variants with sociocultural marker injection to isolate job-irrelevant bias effects, and evaluated 18 LLMs across realistic hiring workflows
- Contributed to a Microsoft Research collaboration on **cultural alignment of AI agents**, supporting a dynamic routing framework with cultural adapters and a multimodal dataset grounded in Southeast Asian norms

Research Assistant **Sep 2023 - Sep 2024**
Collaborative Social Technologies Lab @KAIST *Daejeon, South Korea*

- Designed and developed a **Node.js Discord chatbot** that bridges real-world restorative justice principles to online communities through structured apology workflows
- Conducted qualitative study with community moderators, including **in-the-wild deployment** and **interviews**
- Applied **inductive thematic analysis** to identify opportunities, constraints, and value-dependent contexts for restorative justice in online moderation
- **Key Results:** First author of CHI 2025 paper and second author of CSCW 2025 paper

Research Assistant **Jan 2022 - Jun 2022**
Collaborative Distributed Systems & Networks Lab @KAIST *Daejeon, South Korea*

- Led the development and implementation of OctoFedS, a federated split learning system for edge object detection, integrating YOLOv3 model to achieve 92% mean average precision compared to centralized training
- Conducted extensive experiments and performance analysis to optimize system efficiency and explore practical use cases for federated learning in edge environments
- **Key Results:** First author of published research and presenter of poster at KCC 2022

Full-stack Software Engineer **Jan 2021 - Jun 2021**
Rakuna *Hanoi, Vietnam*

- Developed and maintained **responsive web features** for an HR platform serving 300+ partner businesses, working across a React/Material-UI frontend and a Ruby on Rails backend.
- Collaborated with design and product teams to **revamp UI guidelines** and migrate 40% of legacy codebase to scalable frameworks, improving maintainability and reusability

EDUCATION

EPFL **Sep 2024 - Present**
M.S., Digital Humanities (School of Computer and Communication Sciences) *Lausanne, Switzerland*

- **GPA:** 5.57/6.0
- **Relevant Coursework:** Natural Language Processing, Applied Data Analysis, Computational Social Media

KAIST **Sep 2019 - Aug 2024**
B.S., Computer Science with a double major in Business-Technology Management *Daejeon, South Korea*

- **GPA:** 3.63/4.3
- **Relevant Coursework:** Machine Learning, Computer Vision, Human-AI Interaction, Social Computing

University of Twente **Feb 2021 - Jun 2021**
Exchange, Creative Technology *Enschede, Netherlands*

- **Relevant Coursework:** Data Visualization and Physicalization, Database Management

PUBLICATIONS

The Design Space for Online Restorative Justice Tools: A Case Study with ApoloBot [doi]
ACM CHI 2025 | **Bich Ngoc Doan**, Joseph Seering

Mapping Community Appeals Systems: Lessons for Community-led Moderation in Multi-Level Governance [doi]
ACM CSCW 2025 | Juhoon Lee, **Bich Ngoc Doan**, Jonghyun Jee, Joseph Seering

OctoFedS: A Federated Split Learning System for Object Detection at the Edge [doi]
Korea Computer Congress (KCC) 2022 | **Bich Ngoc Doan**, Thanh Tung Nguyen, Dongman Lee

SKILLS

- **Programming:** Python, JavaScript (Node.js, React), Ruby, C, HTML/CSS
- **AI/ML:** PyTorch, TensorFlow, scikit-learn, prompt engineering, LLM fine-tuning, RAG
- **Data Analysis & Visualization:** pandas, NumPy, SciPy, Tableau
- **System:** Bot development, federated learning
- **Communication:** Stakeholder interviews, cross-team collaboration, research publication
- **Language:** Vietnamese (Native), English (Fluent), Korean (Intermediate), French (Beginner)

SELECTED COURSE PROJECTS

Beyond the Rabbit Hole: Mapping the Relational Harms of QAnon Radicalization [preprint]
Spring 2025, Semester Project @dlab

- Designed a **large-scale computational pipeline** to analyze the relational harms of QAnon radicalization using 12,700+ first-person narratives from Reddit
- Developed data-driven "radicalization personas" via **contextual topic modeling (BERTopic)** and **mixed-membership modeling (LDA-inspired)**, capturing distinct trajectories of belief adoption
- Applied **LLM-assisted annotation** and **regression analysis** to link radicalization trajectories with specific emotional harms in families and close relationships

QwenSTEM: Fine-tuning Small Language Models for STEM Education [report]
Spring 2025, Modern Natural Language Processing

- Fine-tuned a lightweight (0.6B) LLM for university-level **STEM multiple-choice question answering** using advanced optimization techniques including **DPO, quantization, and RAG**
- Achieved higher accuracy than reasoning-based baselines while reducing inference memory usage by up to ~70%, enabling efficient deployment for educational applications

Framing Deception: Analyzing Narratives of Political Deepfakes [report]
Spring 2025, Computational Social Media

- Conducted a large-scale multimodal analysis of **976 political deepfake incidents**, examining narrative framing, emotional cues, and dissemination patterns
- Developed a **narrative typology** of political deepfakes using a multimodal pipeline, combining textual topic modeling with visual emotion recognition and symbol detection
- Modeled content engagement and virality using **regression and network analysis**

From Classroom to Screen: Indian STEM Education on YouTube [data story]
Fall 2024, Applied Data Analysis

- Analyzed **large-scale YouTube data** to study the global rise of Indian STEM education content
- Filtered and analyzed ~75K STEM videos to examine temporal growth patterns, topical focus, and content production strategies via **regression** and **hypothesis testing**
- Performed **sentiment analysis** on user comments to assess perceived content quality and learner reception