Lei Ding

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EDUCATION

University of California, Santa Cruz Aug. 2022 ~ Now
Computer Science Ph.D.: Machine Learning, Large Language Model (**LLM**) & Intelligent Agents Santa Cruz, California, U.S.
Sichuan University Aug. 2004 ~ July. 2007
Master: Applied Computer Technology - Computer Network Sichuan, China
Sichuan University Aug. 2000 ~ July. 2004
Bachelor: Software Engineering Sichuan, China

PUBLICATIONS

- Lei Ding, Yi Zhang, Jeshwanth Bheemanpally, Enhancing Mobile" How-to" Queries with Automated Search Results Verification and Reranking. The Second Workshop on Generative Information Retrieval, SIGIR 2024.
- Yue Fan, Lei Ding, et al., Read Anywhere Pointed: Layout-aware GUI Screen Reading with Tree-of-Lens Grounding. EMNLP 2025.
- Li Liu, Diji Yang, Sijia Zhong, Kalyana Suma Sree Tholeti, Lei Ding, Yi Zhang, Leilani H. Gilpin, Right this way: Can VLMs Guide Us to See More to Answer Questions? NeurIPS 2025.
- Timothy Wei, Hsien Xin Peng, Elaine Xu, Bryan Zhao, Lei Ding, Diji Yang, Dual-Model Distillation for Efficient Action Classification with Hybrid Edge-Cloud Solution. NeurIPS 2025.
- Vanshika Vats, Lei Ding, James Davis, et al., A Survey on Human-AI Teaming with Large Pre-Trained Models. ACM Computing Surveys 2025(In review).
- Wu Weiping, Ding Lei. Digitalization and upgrading of drug design and development by artificial intelligence. Changsha, international peptide drugs and innovation summit 2022, oral presentation.
- Abena AChiaa Atwereboannah, Wu Weiping, Ding Lei, Sophyanbi B. Yussif, Edwin Tenagyei. Protein-ligand binding affinity prediction using Deep Learning, 2021 18th International Computer Conference on Wavelet Active Media Technology and Information Processing (ICCWAMTIP 2021), 56.

PATENT& SOFTWARE COPYRIGHT

- Rating of city road segments for taxi hailing based on HANA technology, US Application NO. 13/934,706 | Patent ID 81495268 | Patent Ref 120542US01, China Application NO. 20130269463.3 | Patent ID 82826027 | Patent Ref 120542CN01
- Automatic category assignment and potential topic discovery for products based on Latent Dirichlet Topic algorithm, SAP Patent Invention ID. 83839165
- Simulator of bundle clicking for validating Bandit strategies in A/B testing, US Application NO. 17/547,637 | Patent ID 83839171 | Patent Ref 210412US01
- Reinforcement Learning Model for product recommendation considering balance between product profit and customer interests, US Application NO. 17/556,238 | Patent ID 83848635 | Patent Ref 210416US01

RESEARCH

University of California, Santa Cruz 2022.08-Present
Computer Science Ph.D. Candidate[1]

- Building **LLM-based acting agents** to explore and complete tasks given specific goal, including plan generation by LLM, plan discovery and extraction from web search (**planning**), building models to predict appropriate actions given application context (**action prediction**), and enabling agents to execute actions on relevant platform (**execution proxy**).
- **Planning**: leverage LLM to identify plan from search results given specific goal, finetune LLM to generate hierarchical plan given goals, so that agents can decouple high-level goals into actions in current application
- **Action prediction**: design **LLM/Vision Language Model(VLM)** that can better understand application context via textural

[1] Check https://llv22.github.io/orlando.github.io/ for open-source projects

and visual information and predict the most suitable action given a plan description. Another goal is to transfer this prediction capacity extend to boarder platforms, like computer clients and web clients.

- **Execution proxy**: support Acting Agent to interact with environment and receive corresponding feedback.
- **Data platform**: Built up a platform **MagicWand** and **mobile apps** to collect training data by allowing annotators to complete tasks on Android devices, enabling agents to execute plans and collect agent execution trajectories.

WORKING EXPERIENCE

SAP Upscale, SAP Labs 2017.07-2022.08

Senior Data Scientist and Architect

- Conducted convergence analysis of A/B testing of product bundles (product combination) that customers show decayed interest in using Epsilon Greedy, Softmax and UCB1 Bandit Algorithms for customer behaviors' simulation.
- Analyzed product similarity and complement relationship via Latent Dirichlet Allocation Model given the products category tree and the text feature of products.
- Discover and generate product bundle via Collaborative Filtering, Apriori, FP-Growth based on short-term customer interests.
- Generated dynamic product bundles and recommended product items to customers using Deep Reinforcement Learning in order to hit the balance between gaining product profit for merchant and fulfillment of customer interests based on product features and short-term customers' behavior data.

SAP Engagement Center on Cloud Infrastructure, SAP Labs 2015.04-2017.06

Senior Software Engineer and Architect

- Conducted service exception discovery model based on Multivariate Gaussian distribution and analyzed efficiency of exception handling in the system.
- Analyzed system bottleneck and optimized services based on payload statistics and service dependency graph.

Big data application and algorithm optimization in SAP Nanjing Innovation Center, SAP Labs 2011.04-2015.03

Algorithm Lead and Architect

- Optimized CONOP[2] based on Simulated Annealing Algorithm to determine relative time scale of fossil records, and proposed a parallelization solution based on Monte Carlo sampling: a co-innovation project with Nanjing Institute of Geology and Paleontology[3]
- Designed the Nanjing Smart Traffic Platform, including Origin-Destination analysis, city congestion analysis, dynamic traffic zone extraction, short-term congestion prediction, fake vehicle plate number discovery.

Platform development and partner toolkit development for SAP Business ByDesign, SAP Labs 2007.05-2011.03

Algorithm and Application Developer

- Developed Business Object Description Language (BODL) and Advanced Business Scripting Language (ABSL) based on ANTLR, and integrated them with Eclipse and Visual Studio for SAP Partner Development Infrastructure(PDI).
- Developed Visual Studio plugins and visual editor of User Interface (UI) by an across-AppDomain communication framework that also guarantees process security via .Net AppDomain isolation.

HONOR & CERTIFICATES

- 2003 Microsoft Innovation Cup - SALT, The school team, 12th place of Mainland China, Touronline (virtual tour online)
- 2010 SAP Excellent Employee，2012 SAP High Potential Employee
- 2013 and 2014 Team Coach of Nanjing Innovation Center in SAP Innovation Competition, 1st place of China Lab
- Tianchi CIMKM AnalytiCup 2018, Cross-lingual Short-text Matching of Question Pairs, 26/1027
- Coursera Andrew Ng's Machine Learning Series(with programming assignment)，refer to certificate
- Coursera Andrew Ng's Deep Learning Series (with programming assignment), refer to certificate
- Coursera Daphne Koller's Probabilistic Graph Model 1，2，3(with programming assignment)，refer to certificate
- Coursera Geoffrey Hinton's Neural Networks for Machine Learning, refer to certificate
- Udacity Michael Littman and Charles Isbell's Reinforcement Learning
- UC Berkeley CS285 by Sergey Levine，refer to programming assignment

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[2] CONOP, refer to https://www.paleosoc.org/assets/docs/extended-CONOP-COURSE-NOTES.pdf

[3] Algorithm design, refer to SAP China Tech Talk ZE038 delivered by Orlando

UNIVERSITY OF CALIFORNIA SANTA CRUZ

***** U N O F F I C I A L *****

Name: Ding, Lei
Student ID: 2005751

Institution Info: University of California, Santa Cruz
1156 High Street
Santa Cruz, CA 95064

Beginning of Graduate Record

2022 Fall Quarter

Program: Computer Science & Engineer
Plan: PhD in Computer Science and Engineering

Course		Description	Attempted	Earned	Grade	Points
CSE	200	Research & Teaching	3.00	3.00	S	0.000
CSE	201	Analysis Algorithms	5.00	5.00	A-	18.500
GRAD	200	Academic Writing	0.00	0.00	S	0.000
GRAD	201	Oral Communication	0.00	0.00	S	0.000
GRAD	202	Reading & Research	0.00	0.00	S	0.000
NLP	201	NLP I	5.00	5.00	A+	20.000

Academic Standing Effective 01/09/2023: Good Standing

			Attempted	Earned	GPA Units	Points
Term GPA	0.00	Term Totals	13.00	13.00	10.00	38.500
Transfer Term GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined GPA	0.00	Comb Totals	13.00	13.00	10.00	38.500
Cum GPA	0.00	Cum Totals	13.00	13.00	10.00	38.500
Transfer Cum GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined Cum GPA	0.00	Comb Totals	13.00	13.00	10.00	38.500

2023 Winter Quarter

Program: Computer Science & Engineer
Plan: PhD in Computer Science and Engineering

Course		Description	Attempted	Earned	Grade	Points
CSE	240	Artif Intelligence	5.00	5.00	A	20.000
CSE	244B	Machine Learning NLP	5.00	5.00	A	20.000
CSE	297A	Individual Study	5.00	5.00	S	0.000
NLP	202	NLP II	5.00	5.00	A	20.000

Academic Standing Effective 03/29/2023: Good Standing

			Attempted	Earned	GPA Units	Points
Term GPA	4.00	Term Totals	20.00	20.00	15.00	60.000
Transfer Term GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined GPA	4.00	Comb Totals	20.00	20.00	15.00	60.000
Cum GPA	3.94	Cum Totals	33.00	33.00	25.00	98.500
Transfer Cum GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined Cum GPA	3.94	Comb Totals	33.00	33.00	25.00	98.500

2023 Spring Quarter

Program: Computer Science & Engineer
Plan: PhD in Computer Science and Engineering

Course		Description	Attempted	Earned	Grade	Points
CSE	232	Distributed Systems	5.00	5.00	A	20.000
CSE	297A	Individual Study	5.00	5.00	S	0.000

Academic Standing Effective 06/19/2023: Good Standing

			Attempted	Earned	GPA Units	Points
Term GPA	4.00	Term Totals	10.00	10.00	5.00	20.000
Transfer Term GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined GPA	4.00	Comb Totals	10.00	10.00	5.00	20.000

***** U N O F F I C I A L *****

Name: **Ding, Lei**
Student ID: **2005751**

Cum GPA	3.95	Cum Totals	43.00	43.00	30.00	118.500
Transfer Cum GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined Cum GPA	3.95	Comb Totals	43.00	43.00	30.00	118.500

2023 Fall Quarter

Program: Computer Science & Engineer
Plan: PhD in Computer Science and Engineering

Course		Description	Attempted	Earned	Grade	Points
CSE	290L	Crowdsourcing	5.00	5.00	A+	20.000
CSE	297A	Individual Study	5.00	5.00	S	0.000

Academic Standing Effective 12/19/2023: Good Standing

			Attempted	Earned	GPA Units	Points
Term GPA	4.00	Term Totals	10.00	10.00	5.00	20.000
Transfer Term GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined GPA	4.00	Comb Totals	10.00	10.00	5.00	20.000
Cum GPA	3.95	Cum Totals	53.00	53.00	35.00	138.500
Transfer Cum GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined Cum GPA	3.95	Comb Totals	53.00	53.00	35.00	138.500

2024 Winter Quarter

Program: Computer Science & Engineer
Plan: PhD in Computer Science and Engineering

Course		Description	Attempted	Earned	Grade	Points
CSE	290C	Adv Machin Learning	5.00	5.00	A+	20.000
CSE	290K	Adv Topics in NLP	5.00	5.00	A	20.000
CSE	297A	Individual Study	5.00	5.00	S	0.000

Academic Standing Effective 03/23/2024: Good Standing

			Attempted	Earned	GPA Units	Points
Term GPA	4.00	Term Totals	15.00	15.00	10.00	40.000
Transfer Term GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined GPA	4.00	Comb Totals	15.00	15.00	10.00	40.000
Cum GPA	3.96	Cum Totals	68.00	68.00	45.00	178.500
Transfer Cum GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined Cum GPA	3.96	Comb Totals	68.00	68.00	45.00	178.500

2024 Spring Quarter

Program: Computer Science & Engineer
Plan: PhD in Computer Science and Engineering

Course		Description	Attempted	Earned	Grade	Points
CSE	290C	Adv Machin Learning	5.00	5.00	A	20.000
CSE	297B	Individual Study	10.00	10.00	S	0.000

Academic Standing Effective 06/18/2024: Good Standing

			Attempted	Earned	GPA Units	Points
Term GPA	4.00	Term Totals	15.00	15.00	5.00	20.000
Transfer Term GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined GPA	4.00	Comb Totals	15.00	15.00	5.00	20.000
Cum GPA	3.97	Cum Totals	83.00	83.00	50.00	198.500
Transfer Cum GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined Cum GPA	3.97	Comb Totals	83.00	83.00	50.00	198.500

UNIVERSITY OF CALIFORNIA
SANTA CRUZ

***** U N O F F I C I A L *****

Name: **Ding, Lei**
Student ID: **2005751**

2024 Fall Quarter

Program: Computer Science & Engineer
Plan: PhD in Computer Science and Engineering

Course		Description	Attempted	Earned	Grade	Points
CSE	299B	Thesis Research	10.00	0.00		0.000

			Attempted	Earned	GPA Units	Points
Term GPA	0.00	Term Totals	10.00	0.00	0.00	0.000
Transfer Term GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined GPA	0.00	Comb Totals	10.00	0.00	0.00	0.000
Cum GPA	3.97	Cum Totals	93.00	83.00	50.00	198.500
Transfer Cum GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined Cum GPA	3.97	Comb Totals	93.00	83.00	50.00	198.500

Graduate Career Totals

Cum GPA:	3.97	Cum Totals	93.00	83.00	50.00	198.500
Transfer Cum GPA		Transfer Totals	0.00	0.00	0.00	0.000
Combined Cum GPA	3.97	Comb Totals	93.00	83.00	50.00	198.500

End of *** U N O F F I C I A L ***