

Xiangyang Zhou

Baidu Technology Campus – Haidian District – Beijing, China

☎ +86 185 1536 7225 • ✉ xiyzhouang@gmail.com

I joined Baidu in July 2012, and I am currently a *staff research & development engineer (T8)* in the Natural Language Processing (NLP) department of Baidu. My area of interests include human-computer conversation (chatbots), question-answering, deep learning and its application in natural language processing.

Notable Projects

Human-Computer Conversation (chatbots)

Baidu-NLP

Staff Research & Development Engineer (T8)

July 2014–Now

- **Supervisor:** Dianhai Yu (Currently the Principle Research & Development Engineer (T10))
- **Responsibility:** In charge of building conversational agents (chatbots), exploring better model/system architectures, and providing technical support to the whole business of Baidu.
- **Research:** Led research topics in both fields of the retrieval-based chatbots and the generation-based chatbots. Work together with team members to fight against most challenging tasks in chatbots, including *multi-turn response selection*, *learning from dialog feedbacks using reinforcement learning (RL)* and *generative adversarial networks (GAN)*, *improving seq2seq-based dialogue generation with copy mechanism* and *the automatic evaluation of dialogue systems*. Many of our works have been published at top NLP/AI conferences, like ACL, EMNLP, CIKM, etc., demonstrating the strong power of Chinese AI research.
- **Industry Application:** Led the industrial application of chatbots, including building IR-based chatbots with billions of dialogue corpus and deploying it as web services at ai.baidu.com with our team members. Our chatbots technology have already supported many industrial applications such as **Duer** (a.k.a DuerOS or Xiaodu), **Baidu NewsFeed**, **Baidu Tieba**, **Baidu Interactive Search**, **Baidu Smart Airports** and the other business inside/outside the company.

Entity Search in Baidu Search Engine

Baidu-NLP

Advanced Research & Development Engineer (T5)

Dec 2012–July 2014

- **Supervisor:** Shiqi Zhao (Currently the Director of Baidu NewsFeed)
- **Responsibility:** In charge of improving the entity search system in Baidu search engine.
- **Proposed Method:** We proposed a novel domain-agnostic mining algorithm that can automatically discover entity-seeking-queries and their answers using the joint user behaviors from Baidu web search and Baidu Zhidao (the largest Chinese Community Question-Answering platform).
- **Achievement:** Our mining algorithm can discover hundreds of thousands fresh entity-seeking question-answer pairs every single day, covering popular domains such as music, movies, books, video-games etc. Our proposed mining algorithm has been integrated into Baidu search engine, which can directly show a list of entity answers, at the top of page search results, for every entity-seeking-query, making the life of billions Chinese internet users, especially at mobile devices, easier and happier.

CQA Answer Ranking in Baidu Zhidao

Baidu-NLP

Research & Development Engineer (T3)

July 2012–Dec 2012

I implemented a perceptron-based Learning to Rank (LTR) model for ranking answers in CQA, this model is trained with a modified pairwise hinge loss, $L = \sum_i \Lambda_i * (I(f(x_{+1}) - f(x_{-1}) < m)) + ||\theta||_2^2$, where Λ_i is a weight factor telling the model how reliable this instance is, in order to improve the model robustness.

Achievement: We evaluated our model on 100 CQA questions along with answers collected from *Baidu Zhidao*, it archived 92% P@1 which is comparable to the state-of-the art models. It was integrated into the ranking model of Baidu search engine as a feature to improve user experience.

Internship

Full-time Intern

Microsoft Research Asia - NLC

Extracting social events for tweets using a factor graph,

Dec 2010– June 2012

Did research in the field of events extraction and factor graphical models advised by Xiaohua Liu. Implemented a factor-graphical-model in C# with maximum clique size 2, which can be seen as a advanced Conditional Random Field (CRF) model. Published our work in AAAI-2012.

Selected Publications

- **Multi-Turn Response Selection for Chatbots with Deep Attention Matching Network (ACL-2018, full-paper)**
Xiangyang Zhou, Lu Li, Daxiang Dong, Yi Liu, Ying Chen, Wayne Xin Zhao, Dianhai Yu and Hua Wu.
- **Multi-View Response Selection for Human-Computer Conversation (EMNLP-2016, full-paper)**
Xiangyang Zhou, Daxiang Dong, Hua Wu, Shiqi Zhao, Rui Yan, Dianhai Yu, Xuan Liu, Hao Tian.
- **"Shall I Be Your Chat Companion?" Towards an Online Human-Computer Conversation System (CIKM-2016, full-paper)**
Rui Yan, Yiping Song, Xiangyang Zhou, Hua Wu.
- **Extracting Social Events for Tweets Using a Factor Graph (AAAI-2012, full-paper)**
Xiaohua Liu, Xiangyang Zhou, Zhongyang Fu, Furu Wei, Ming Zhou.
- **Joint Inference of Named Entity Recognition and Normalization for Tweets (ACL-2012, full-paper)**
Xiaohua Liu, Ming Zhou, Xiangyang Zhou, Zhongyang Fu, Furu Wei.
- **Collective Nominal Semantic Role Labeling for Tweets (AAAI-2012, full-paper)**
Xiaohua Liu, Zhongyang Fu, Xiangyang Zhou, Furu Wei, Ming Zhou.

Education

- **Computer Science and Technology** **Shandong University**
Bachelor degree *2007–2012*

Awards

- Outstanding Engineer of Baidu NLP department
- Outstanding Fresh Engineer of Baidu NLP department
- Best Undergraduate Thesis of Shandong Province
- Outstanding Undergraduate of Shandong University
- Brown Medal of 34th ACM-ICPC Tianjin Contest

Skills

- **Machine Learning** Familiar with machine learning application. Skilled in tensorflow, theano and other machine learning tools.
- **Programing** Familiar python, c/c++, c#, large-scale online program writing and some skills in speeding up deep learning codes.

Services

- **Program Committee member of AAAI-2019,**
- **Reviewer of ACM Transactions on Intelligent Systems and Technology**

Others

Whenever I am not working, I like watching movies or going hiking with my friends, also I like reading the history of human beings in different cultures. Sometimes I kill time by practicing in some short-term technical contests about coding, algorithm or machine learning. By the way, I am a DOTA2 (the Defense of The Ancient 2) player and I won the champion of Baidu DOTA league **twice** as captain :p.