Some Experience on Research Supervision for Postgraduate Students

Jianliang Xu
Department of Computer Science

April 2018
My 🌹🌹🌹 Garden

- 14 PhD and PostDoc students
- 5 MPhil students
Story #1: Shen Gao

• Undergraduate in our department (2006 – 2010)
  • Summer research + FYP
  • **New database design** exploiting emerging storage technology
  • Implemented a **prototype** in an open-source database
  • Published a **research demo paper** in a major int’l conference

• **Awards**
  • **Bronze Prize** in the 2010 Amway Pan-Pearl River Delta Region Universities IT Project Competition
  • **First Class Prize** in the 12th National Challenge Cup Contest, 2011
Story #1: Shen Gao (Cont’d)

- Continued research journey in MPhil (2010-2013)
  2. PCMLLogging: Optimizing Transaction Logging and Recovery Performance with PCM (*IEEE Transactions on Knowledge and Data Engineering*)
     - Collaborated with University of Kaiserslautern, Germany
  3. Real-Time In-Memory Checkpointing for Future Hybrid Memory Systems (*ACM Int’l Conf. on Supercomputing*)
     - Collaborated with Nanyang Technological University, Singapore

- Furthered PhD in University of Zurich, Switzerland (2013 - 2017)

- Joined Google (Zurich) as Software Engineer (2018 - )

#1: Be alert to new developments in related fields (to define new problems)
#2: Exchange helps in widening students’ academic and cultural horizons
Story #2: Qian Chen

• Background
  • BSc in Computer Science from East China Normal University (2007-2011)
  • 42nd place in World Finals of ACM-ICPC Programming Contest

• Research map (2011-2015)
  • 2012: Authenticating Location-based Services, ACM SIGMOD (3rd author)
  • 2013: VERDICT: Privacy-Preserving Authentication, IEEE ICDE (2nd author)
  • 2014: Authenticating Top-k Queries, PVLDB (1st author)
  • 2015: Authenticated Data Integration Services, ACM SIGMOD (1st author)
  • Beyond: IEEE TKDE (3rd author), IEEE TKDE (2nd author), IEEE TMC (2nd author)

• Careers after graduation

#3: Get started by participating in senior’s research and go deeper and wider
Road to Publication

• Version #1: Privacy-Preserving Authentication of kNN Queries

Review comments:
• Techniques not novel
• Problem not adequately motivated
• Security not formally analyzed
• Limited experimental evaluation

Revisions:
• Better writing for clarification of novel contributions
• Extended to top-k queries
• More security discussions
• Enhanced experimental evaluation
Road to Publication

Version #2: Privacy-Preserving Authentication of Top-k Queries

Review comments:
• No formal security model
• Continuous privacy problem
• PPB method is not correct

Revisions:
• Introduction of a formal security model — semantic security of rank values
• A query admission scheme for continuous queries
• Fixed the problem in PPB method

#4: Never give up and offer advices for improvement if a paper gets rejected
Story #3: Jingjing Chen

• **Background**
  • BEng in Computer Science from China Jiliang University
  • Strong in system building but relatively weak in theoretical analysis

• **Research topic**
  • Enhancing student engagement and interaction in e-learning environments

• **Web-Intera Classroom**
  • Leveraging HCI and Big Data technologies
  • Published in *Interactive Learning Environments*, a top journal of educational research
  • Transformed into *eBanshu*, an online education platform with 50,000 active users in HK and Mainland China

#5: Identify research topic that fits student’s strength and interest
Summary – BEGIN++

- Be alert to new developments in related fields (to define new problems)
- Exchange helps in widening students’ academic and cultural horizons
- Get started by participating in senior’s research and go deeper and wider
- Identify research topic that fits student’s strength and interest
- Never give up and offer advices for improvement if a paper gets rejected

++ **Work hard** to find the best students to work with you
- Promote your research and build up reputation
- Collaborate, publish, talk, service