

CONG GAO

209 - 2931 HARDING ST., REGINA, SK S4V1B9
+1(306)515-3639 • gao266@cs.uregina.ca • <http://uregina.ca/~gao266>

EDUCATION

PhD in Computer Science, GPA: 97/100, University of Regina, Regina, Canada (2014 - 2018)

- Research topic: actionable three-way decision theory (mining actionable rules for benefit).
- Won two best student paper awards (RSKT 2014 and IJCRS 2017).
- Participated in one Natural Sciences and Engineering Research Council (NSERC) project.

MSc in Computer Science, GPA: 85/100, Soochow University, Suzhou, China (2009 - 2012)

- Research topic: machine learning.
- Won one best student paper award (CRSSC-CWI-CGrC 2011).

DATA ANALYSIS EXPERIENCE

Research Assistant, University of Regina, Regina, Canada (2018 - present)

- Collaborating with ISM Canada to adapt my method (A3WD) to their projects.
- Using decision tree for extracting classification rules and mining actionable rules for benefit.

NSERC Researcher, University of Regina and ISM Canada, Regina, Canada (2017 - present)

- Analyzing and mining actionable rules from data to create benefit and profit for an NSERC project (my research is one of the main parts of this NSERC project).

Researcher, Mitacs and ISM Canada, Regina, Canada (2016 - 2017)

- Analyzed problems for which traditional data analysis techniques cannot provide user satisfied solutions.
- Extracted actionable rules from data in order to transfer objects from unfavorable classes to favorable classes.
- Proposed and implemented four models for finding actionable rules.

Research Assistant, Soochow University, Suzhou, China (2009 - 2011)

- Assisted Professor Fanzhang Li in the project "Image Invariant Feature Theory and Key Technology Based on Cognitive Model."
- Assisted Professor Fanzhang Li in the project "Research of Data Reduction-Oriented New Machine Learning Method."

Data Preprocessor, Suzhou Public Transit Data Mining Project, Suzhou, China (2010)

- Analyzed the inconsistent, incomplete, and large-sized bus GPS data.
- Developed a program to preprocess the data into a database for future processing.

PROFESSIONAL WORK EXPERIENCE

Technical Director, Vin Exhibition Network Technology Co., Ltd, Suzhou, China (2012 - 2013)

- Provided technical advices to programmers and technical sales personnel and made project development plans.
- Developed a technical solution and applied a patent for the software product Marvelous SIP (Suzhou Industrial Park), a mobile city information portal (an iOS / Android app).
- Analyzed system architecture and designed performance optimization strategy policy based on users' browsing history for project DingDong (a location-based C2C app).
- Reviewed software projects for Suzhou Industrial Park government as a technical consultant.

Vice President, Graduate Students' Union of CS Dept. of Soochow University, Suzhou, China (2009 - 2010)

- Organized the publishing of a symposium of graduate student papers for the year of 2010.
- Organized travel for graduate students of computer science and foreign language departments.

- Organized and hosted the Graduate Culture, Science & Technology Festival at Soochow University.

Senior Programmer & Project Manager, Shinejit Information & Technology Co., Ltd, Shanghai, China (2004 - 2008)

- Designed and programmed an intelligent warping system, two intelligent scheduling systems (KPP and WPP), and a yarn dyed weaving CAD.
- Managed ERP customization and deployment projects for three customer companies (Huaifu Textile Co., Ltd, Mahang Yarn-Dyed Fabric Co., Ltd, and Youngor Knitting Dyeing & Finishing Co., Ltd).

OPEN SOURCE PROJECT EXPERIENCE

I host and programmed the following project

- Gater8 (open source): a homebrew 8-bit CPU and computer based on 7400 series gate chips. (2016 - present)
- Nomad3D (open source): a platform-independent and software-rendered 3D graphics engine. (2009 - present)
- NomadSwan (open source): an emulator of a handheld gaming console, WonderSwan, to Nintendo 3DS. (2015)
- NomadGB(open source): a multi-platform Nintendo GameBoy emulator for Win32, 3DS, and NDS. (2011-2014)
- DSduino (open source): an extension of Nintendo DS supports Arduino and BASIC language. (2014)
- BPNN (open source): a C++ BP neural networks class for pattern recognition and classification. (2010)
- A robot with a robotic arm, video feedback, and iOS controller app based on Raspberry Pi and Arduino. (2013)
- A smart watch prototype with FreeRTOS, OLED, RTC, and Bluetooth based on STM32F4. (2013)
- An iPhone app for drone control, features video feedback, voice communication, and gyro sensor controlling. (2013)

TEACHING & MENTORING

Course Lecturer, University of Regina, Regina, Canada

- CS 301: Digital Systems Architecture (Summer 2018)

Guest Lecturer, University of Regina, Regina, Canada

- CS 350: Programming Language Concepts (Fall 2015, 2016)
- CS 320: Introduction to Artificial Intelligence (Fall 2015, 2016)

Lab Instructor, University of Regina, Regina, Canada

- CS 301: Digital Systems Architecture (Winter 2016, 2017, 2018)
- CS 210: Data Structures and Abstractions (Spring 2016)
- CS 201: Introduction to Digital Systems and MIPS Assembly Language (Fall 2015)
- CS 110: Programming and Problem Solving (Fall 2017, Winter 2017, 2018, Spring 2015, Winter 2015, Fall 2014)
- CS 104: Introduction to Informatics for Health Professionals (Winter 2014)

Mentor, University of Regina, Regina, Canada

- Mentoring programming skills at Breaking Barriers (Winter 2015)

Mentor, Soochow University, Suzhou, China

- Mentoring MFC in Windows programming for undergraduate students (2011)

Teacher, Cixi 2nd Experimental Primary School, Cixi, China

- Grade 6 Math (2003 - 2004)
- Grade 5 Computer Technology (2003 - 2004)

PUBLICATIONS

Journal Papers

- **C. Gao**, H.J. Hamilton, Y.Y. Yao, Utility based actions in actionable three-way decisions. Article manuscript in progress, to be submitted for publication in 2018.

- C. Gao, H.J. Hamilton, Y.Y. Yao, The R4 reduction framework for actionable strategies in three-way decision making. Article submitted to Information Sciences for publication.
- C. Gao, Y.Y. Yao, Actionable strategies in three-way decisions. Knowledge-Based Systems 133: 141-155, 2017.
- F. Zhu, J. Yang, J. Gao, C. Xu, S. Xu, C. Gao, Finding the samples near the decision plane for support vector learning. Information Sciences 382-383: 292-307, 2017.
- F. Zhu, J. Yang, S. Xu, C. Gao, N. Ye, T. Yin, Incorporating neighbors' distribution knowledge into support vector machines. Soft Computing 21: 6407-6420, 2017.
- F. Zhu, J. Yang, C. Gao, S. Xu, N. Ye, T. Yin, A weighted one-class support vector machine. Neurocomputing 189: 1-10, 2016.
- F. Zhu, J. Yang, S. Xu, C. Gao, N. Ye, T. Yin, Relative density degree induced boundary detection for one-class SVM. Soft Computing 20: 4473-4485, 2016.
- F. Zhu, J. Yang, N. Ye, C. Gao, G. Li, T. Yin, Neighbors' distribution property and sample reduction for support vector machines. Applied Soft Computing 16: 201-209, 2014.
- C. Gao, F.Z. Li, C. Shen, Research on Lie group kernel learning algorithm (in Chinese). Journal of Frontiers of Computer Science and Technology, 6(11): 1026-1038, 2012.
- C. Gao, F.Z. Li, Research on Lie group means learning algorithm (in Chinese). Pattern Recognition & Artificial Intelligence, 25(6): 900-908, 2012.
- C. Shen, F.Z. Li, C. Gao, S.P. He, Face tracking in color images based on Lie group (in Chinese). Journal of Frontiers of Computer Science and Technology, 6(7): 654-663, 2012.

Conference Papers

- C. Gao, Y.Y. Yao, Actionable strategies in three-way decisions with rough sets. International Joint Conference on Rough Sets (IJCRS 2017), LNCS 10314(2): 183-199, Olsztyn, 2017. **(Best Student Paper Award)**
- C. Gao, Y.Y. Yao, Determining thresholds in three-way decisions with chi-square statistic. International Joint Conference on Rough Sets (IJCRS 2016), LNCS 9920: 272-281, Santiago de Chile, 2016.
- Y.Y. Yao, C. Gao, Statistical interpretations of three-way decisions. 10th International Conference on Rough Sets and Knowledge Technology (RSKT 2015), LNCS 9436: 309-320, Tianjin, 2015.
- C. Gao, Y.Y. Yao, An addition strategy for reduct construction. 9th International Conference on Rough Sets and Knowledge Technology (RSKT 2014), LNCS 8818: 535-546, Shanghai, 2014. **(Best Student Paper Award)**
- C. Gao, F.Z. Li, Research on Lie group kernel learning algorithm. Proceedings of the Joint Conference of 12th China Conference on Rough Sets and Soft Computing, 6th China Conference on Web Intelligence and 6th China Conference on Granular Computing (CRSSC-CWI-CGrC 2012), Hefei, 2012.
- C. Shen, F.Z. Li, C. Gao, Face tracking in color images based on Lie group. Proceedings of the Joint Conference of 12th China Conference on Rough Sets and Soft Computing, 6th China Conference on Web Intelligence and 6th China Conference on Granular Computing (CRSSC-CWI-CGrC 2012), Hefei, 2012.
- C. Gao, F.Z. Li, Research on Lie group means learning algorithm. Proceedings of the Joint Conference of 11th China Conference on Rough Sets and Soft Computing, 5th China Conference on Web Intelligence and 5th China Conference on Granular Computing (CRSSC-CWI-CGrC 2011), Nanjin, 2011. **(Best Student Paper Award)**

HONORS & AWARDS

PhD, University of Regina, Regina, Canada

- Giving Tuesday Graduate Bursary (2018)
- Scholarship Award (NSERC) (2017, 2018)
- Gerhard Herzberg Fellowship (2016, 2017)
- Computer Science Travel Award (2017)

- Best Student Paper Award at IJCRS 2017 (2017)
- John Spencer Middleton & Jack Spencer Gordon Middleton Scholarship (2017)
- Sampson J. Goodfellow Scholarship (2015, 2016, 2017, 2018)
- Saskatchewan Innovation and Opportunity Graduate Scholarship (2015, 2016)
- Faculty of Graduate Studies and Research Graduate Scholarship (2014, 2015, 2016)
- Faculty of Graduate Studies and Research Graduate Teaching Assistantship (2014, 2015)
- Edgar A. Wahn Scholarship (2015)
- Best Technology Award in 2nd Atmel Cup (Arduino development contest) (2014)
- Best Student Paper Award at RSKT 2014 (2014)
- Graduate Students' Association Graduate Student Travel Award (2014)
- University of Regina International Experience Travel Fund (2014)
- PhD Entrance Scholarship (2014)

Masters, Soochow University, Suzhou, China

- Best Student Paper Award at CRSSC-CWI-CGrC 2011 (2011)
- Excellence Scholarship for Graduate Students (2011)
- 3rd Award in 2nd China Students Service Outsourcing Innovation and Entrepreneurship Competition (2011)
- Excellence Scholarship of Graduate Students (2010)

Project Manager, Shinejit Information & Technology Co., Ltd, Shanghai, China

- Excellent Employee Award in Shinejit Information & Technology Co., Ltd., Shanghai, China (2006)

CERTIFICATES

- System Analyst (senior level, No. 08102180010), MIIT, China. (2008)
- Software Design Engineer (intermediate level, No. 05115180042), MIIT, China. (2005)
- Teacher Qualification Certificate (primary school teaching, No. 20033302420000619), China. (2003)
- Programmer, MIIT, China. (2002)
- Mandarin Chinese (Grade II, No. 2001020100895), China. (2002)
- National Hard-tipped Pen Calligraphy (Grade V), Chinese teenagers penmanship, China. (2002)
- National Computer Rank Examination (Grade IV, top rank, No. 401433000013), Ministry of Education, China.(2002)
- Provincial Computer Rank Examination, (Grade III, top rank, No. 02110319218401), Zhejiang, China. (2002)

VOLUNTEERING

- Volunteered in VR experience research study at the University of Regina, Regina, Canada. (2018)
- Checked tickets for Family Day event at Chinese Mutual Aid Association, Regina, Canada. (2016)
- Provided care for the elderly at Suzhou Volunteer Organization, Suzhou, China. (2012 - 2013)
- Taught a grade 6 student at Suzhou Volunteer Organization, Suzhou, China. (2012 - 2013)