

Curriculum Vitae of Jonathan M. Pikalek

Contact Information

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Education

Ph.D. Computer Science, present, North Dakota State University.
Dissertation Topic: "Optimization and Heuristic Models for Constrained resource Collection Problems."
Advisor: Dr. Kendall E. Nygard.

M.S. Computer Science, May 2006, North Dakota State University.
Thesis Topic: "An Optimization Model for Autonomous Agent Task Planning."
Advisor: Dr. Kendall E. Nygard.

B.S. Computer Science, May 2002, North Dakota State University.
Minors in Psychology and Mathematics. Graduated with honors.

Presentations

"Non-transitive Dice," Concordia College Math / CS Colloquium, January 12, 2010.

"Texture Synthesis with Image Quilting," Concordia College Math / CS Colloquium, March 10, 2009.

"Constrained Resource Collection Problems," Astronaut Scholarship Foundation Technical Conference, May 3, 2008.

"Non-Photorealistic Rendering," NDSU Computer Science guest lecture, November 7, 2007.

"Discrete versus Continuous Simulations," NDSU Computer Science guest lecture, January 23 & 25, 2008.

"Image Analysis & Procedural Texture Synthesis," NDSU ACM Member Meeting (invited talk), November 16, 2006.

Published and Presented Works

Kendall E. Nygard, Martin Lundell, Dianxiang Xu, and Jonathan Pikalek, "Multi-agent Designs for Ambient Systems," Proceedings of the First International Conference on Ambient Media and Systems, February, 2008.

Altenburg, Karl, M. Hennebry, J. Pikalek and K. Nygard, "Simian: A Multi-agent Simulation Framework for Decentralized UAV Task Allocation," ISAST Transactions on Intelligent Systems, 2008.

Kendall E. Nygard, Karl Altenburg, Harish Mukhami, and Jonathan Pikalek, "Swarm Intelligence for Formation Flight with Autonomous UAVs," Seventh International Conference on Cooperative Control and Optimization, January, 2007.

Jonathan Pikalek, "An Optimization Model for Autonomous Agent Task Planning", Master's Thesis, NDSU Department of Computer Science and Operations Research, 2006.

Kendall E. Nygard, Karl Altenburg, Jingpeng Tang, Doug Schesvold, and Jonathan Pikalek, "Alternative Control Methodologies for Patrolling Assets with Unmanned Air Vehicles," Fifth International Conference on Cooperative Control and Optimization, December, 2004. Accepted as a chapter in D. Grundel, R. Murphey, P. Pardalos, O. Prokopyev, eds., book on Cooperative Control and Optimization, 2006.

Kendall E. Nygard, Karl Altenburg, Jingpeng Tang, Doug Schesvold, and Jonathan Pikalek, "Alternative Control Methodologies for Patrolling Assets with Unmanned Air Vehicles," Fifth International Conference on Cooperative Control and Optimization, December, 2004.

Kendall E. Nygard, Karl Altenburg, and Jonathan Pikalek, "Discrete Optimization for Near Real-time Task Allocation for Unmanned Air Vehicles," Presentation and CD Rom Publication, U. S. Air Force Office of Scientific Research Meetings on Cooperative Control, Caltech, Pasadena, August 9, 2004.

Publications Being Written

Jonathan Pikalek, "Optimization and Heuristic Models for Constrained Resource Collection Problems," Doctoral Dissertation, NDSU Department of Computer Science and Operations Research.

Publication Contributions

V.B. Hinsz, "BRUTE: A versatile research platform for studying UAV operator behavior." Invited paper presented at the 2nd annual Human Factors of UAVs Workshop, Mesa, AZ. 2005.

Grants & Scholarships

2005-2008 Recipient of the Astronaut Scholarship Foundation Scholarship.

2005-2008 Recipient of the NDSU Presidential Doctoral Graduate Fellowship.

2005 Recipient of the ND Space Grant Research Assistantship.

Awards & Honors

Selected for charter membership in Upsilon Pi Epsilon International Honor Society for Computing Sciences.

Nominated for 2006 NDSU Gunkelman Award.

Placed 3rd in the Spring 2006 NDSU TopCoder programming competition.

NDSU College of Mathematics and Science Dean's List 1997 to 2002.

Recipient of 1998 Gold Key National Honor Society Sophomore award recognizing scholastic achievement.

Boy Scouts of Canada Chief Scout rank (highest Canadian Scouting award).

Boy Scouts of America Star Scout rank.

Teaching Experience

Instructor, August 2008 - Present

Department of Mathematics & Computer Science, Concordia College

- Teach three undergraduate courses per semester, sizes range from 6 to 26 students
- Develop curriculum, create lecture materials, write and grade homework and exams
- Hold regular office hours and meet with graders and tutors
- Advise students with respect to course planning and post college transition strategies

Graduate Teaching Assistant, Spring 2005

Department of Computer Science & Operations Research, NDSU

- Assumed full responsibility for course including:
 - Lecturing
 - Grading
 - Preparing all course materials

Graduate Teaching Assistant, Summer 2005

Department of Computer Science & Operations Research, NDSU

- Converted previously developed teaching material for online distance learning course.
- Assumed full responsibility for course including:
 - Lecturing
 - Grading
 - Preparing all course materials

Courses Taught

Year	Semester	Institution	Course
2010	Spring	Concordia College	CSC 104 Office Applications
2010	Spring	Concordia College	CSC 125 Introduction to Computer Science
2010	Spring	Concordia College	CSC 225 Fundamental Structures
2009	Fall	Concordia College	CSC 125 Introduction to Computer Science (2 sections)
2009	Fall	Concordia College	CSC 225 Fundamental Structures
2009	Fall	Concordia College	CSC 320 Independent Study (half semester)
2009	Summer	Concordia College	CSC 320 Independent Study
2009	Spring	Concordia College	CSC 125 Introduction to Computer Science
2009	Spring	Concordia College	CSC 225 Fundamental Structures
2009	Spring	Concordia College	CSC 320 Computer Systems & Organization
2008	Fall	Concordia College	CSC 104 Office Applications
2008	Fall	Concordia College	CSC 125 Introduction to Computer Science (2 sections)
2005	Summer	NDSU	CSCI 159 Problem Solving in Computer Science (distance learning)
2005	Spring	NDSU	CSCI 159 Problem Solving in Computer Science

Training and Workshops

Faculty Mentoring Program on Faith and Learning, Fall 2009-Spring 2010

Dovre Center for Faith and Learning, Concordia College

- Participants debate and explore connections between faith and learning within their own work at the college
- Following a two-day workshop in August, the group meets on a monthly basis throughout the year, developing individual projects based in their own disciplines
- Projects are presented at the conclusion of the seminar at a one day workshop

New Advisor Workshop, Summer 2009

Concordia College

- Two half-day sessions which introduce Concordia's advising process to new advisors
- Presentations discuss advising with respect to:
 - Concordia's mission and curriculum
 - Academic progress
 - FERPA
 - Referral procedures
 - Registration
 - Resources for advisors and advisees

New Faculty Orientation, Fall 2008

Concordia College

- A two day orientation designed to introduce new faculty and staff to each other and Concordia College
- Covers both general teaching as well as information specific to Concordia College
- Presentations discuss:
 - Mission of the college
 - Goals of the liberal arts
 - Curriculum
 - Student support
 - Promotion procedures

Research Experience

Graduate Research Assistant, May 2002 - Aug 2008

Department of Computer Science & Operations Research, NDSU

- Participated and contributed to group research of UAV and autonomous Mars rover mission planning
- Duties included: independent code testing, design, implementation, and testing of simulation models, AI models and corresponding visualizations of these systems
- Collaborated with faculty, other graduate student researchers and undergraduate student researchers

Graduate Research Assistant, May 2003 - Jan 2004

Department of Psychology, NDSU

- Customized and updated the source code for BRUTE (Basic Research UAV Task Environment)
- Duties included modifying source code, initialization files and training scenarios for customized research studies
- Collaborated with Psychology department faculty and post-doc researchers

Undergraduate Research Assistant, Feb 2001 - May 2002

Department of Computer Science & Operations Research, NDSU

- Participated and contributed to group research of UAV mission planning.
- Duties included: independent code testing, design, implementation, and testing of simulation models, AI models and corresponding visualizations of these systems.
- Collaborated with faculty, graduate student researchers

IT Employment History

Student Consultant Manager, Feb 2001 - May 2002

Information & Technology Services, NDSU

Took on lead responsibility for the following duties:

- Supervised management of student consulting program
- Developed and enacted computer cluster policies and procedures
- Implemented employee policies
- Conducted budget research and bookkeeping
- Performed employee interviews, hiring, evaluation and dismissal
- Facilitated team communication.

Student Consultant Assistant Manager, July 2000 - Feb 2001

Information & Technology Services, NDSU

Assisted the student consultant manager with the following duties:

- Supervised management of student consulting program
- Developed and enacted computer cluster policies and procedures
- Implemented employee policies
- Conducted budget research and bookkeeping
- Performed employee interviews, hiring, evaluation and dismissal
- Facilitated team communication.

Multimedia Administrator, Feb 2000 - July 2000

Information & Technology Services, NDSU

Supervised management of the Service Center multimedia facilities

Duties included:

- Policy creation
- Product research and budget proposals
- Special purpose systems administration

Multimedia Administrator, Feb 1999 - Feb 2000

Information & Technology Services, NDSU

Duties include:

- Network and computer lab maintenance
- Assisting users with printing and plotting
- Policy enforcement
- Answering user questions
- Providing customer service

Service

Microsoft MORE program, Aug 2008- Present

Concordia College

- Currently serving as Concordia's representative in Microsoft's Mentoring Outreach and Retention in Education (MORE) program
- Primary objective is to attract and retain women to science, technology, engineering and mathematics careers, with a particular emphasis on computer science related disciplines
- Responsibilities include:
 - Maintaining communication with Microsoft representatives
 - Organizing and promoting local participation in events
 - Coordinate video conference meetings with Microsoft and other colleges

Computer Science Facilities Funding Advisory Committee, Aug 2006 – Aug 2008

Department of Computer Science & Operations Research, NDSU

- Committee made recommendations to department concerning the expenditure of discretionary funds for department specific computer labs
- Responsibilities include:
 - Researching computer lab equipment
 - Proposing access, security and maintenance procedures
 - Developing and implementing a longitudinal budget

Computer Science Department Head Hiring Committee, 2006

Department of Computer Science & Operations Research, NDSU

- Committee met during the academic year to recruit a new department head
- Responsibilities included:
 - Determining the specifics of the job description
 - Advertising for the position
 - Evaluating applications
 - Interviewing applicants
 - Sharing committee feedback with university administrators

Computer Science Department Faculty Search and Hiring Committees, 2005 – 2007

Department of Computer Science & Operations Research, NDSU

- Served on multiple committees to recruit a new faculty to department
- General responsibilities included:
 - Determining the specifics of the job description
 - Advertising for the position
 - Evaluating applications
 - Interviewing applicants
 - Collecting feedback from department members
- As the student representative I was specifically tasked with:
 - Organizing and promoting student group interviews of applicants
 - Collecting and sharing student feedback with the committee

Computing & Information Technologies Planning & Goals (CITPG) Committee, 2003 – 2005

NDSU

- Committee met weekly during the academic year (to discuss and formulate plans for campus computing activities)
- Each college (except University Studies) plus Computer Science, Ag Communications, ITS, Library, Staff Senate, and Student Senate had a representative on CITPG
- As the student representative I was responsible for:
 - Voicing relevant student perspectives
 - Collecting and sharing student feedback with regards to campus computing policies and activities
- Note: in May 2006, the IT Advisory Group replaced the CITPG Committee

Professional Memberships

Member of Upsilon Pi Epsilon International Honor Society for Computing Sciences 2006 to present

Member of Association for Computing Machinery (ACM) 1999 to present