

Vanessa H. Clark

vclark (at) wustl.edu

www.students.cec.wustl.edu/~vhc1

(xxx) xxx-xxxx

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EDUCATION

Washington University, St. Louis, MO

Ph.D. Candidate, Computer Science, GPA: 3.57, May 2008

B.S., Computer Science, Summa Cum Laude, GPA: 3.92, May 2004

- Dean's List, all semesters

Illinois Mathematics and Science Academy, Graduate, Aurora, IL, June 2000

- Co-founded speech and debate team, 1999

RESEARCH EXPERIENCE

Washington University, St. Louis, MO

Doctoral Student Researcher, Depts. of Computer Science & Radiation Oncology 2003 - present

- Design algorithms for radiation therapy treatment planning optimization problems
- Collaborate with researchers to draw parallels between known computer science and radiation oncology problems
- Write and present research for international conferences and journals

Student Researcher, Dept. of Computer Science 2003

- Integrated distributed capabilities into the JPie live visual programming environment
- Implemented CORBA and SOAP distributed protocols
- Developed, as key team member, a software engineering framework and resulting paper

Summer Programmer, Dept. of Radiation Oncology Summers 2002 - 2003

- Developed a visual treatment planning research tool in Matlab
- Implemented interpolation and visualization techniques for three dimensional data
- Published work representing research accomplishments

Argonne National Laboratory, Argonne, IL

Lab Researcher, Dept. of Energy Technology Summer 2001

- Assisted in developmental stages of a nitrogen dioxide sensor for automobile exhaust
- Designed experiments to measure effectiveness of device
- Wrote paper to analyze results from research and describe ion-mobility spectrometry

Washington University, St. Louis, MO

Biology Summer Scholar, Dept. of Neurology Summer 2000

- Assisted in research using positron emission tomography to determine causes of dyskinesias related to dopamine treatment in patients with Parkinson's disease
- Wrote shell scripts in UNIX to calculate data
- Presented analysis of results to peers and professionals

TEACHING EXPERIENCE

Washington University, St. Louis, MO

Professor Fall 2005 (2 sections), Spring 2006 (1 section), Fall 2006 (1 section)

- Designed and taught *CSE100B Intro to Computing: Matlab Skills* course

Head Teaching Assistant 2001 - 2003

- Assisted students with questions and graded assignments for *Intro to Computer Science (Java)*, 4 semesters

HONORS AND AWARDS

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| Washington University, St. Louis, MO | |
| Graduate Student Research Symposium, 2 nd Place in Engineering | 2006 |
| National Ph.D. Leadership Conference | 2005 |
| Invited leader with other national academic representatives | |
| <i>Professional Excellence Award</i> recipient, Computer Science and Engineering Department | 2004 |
| Convergys Scholarship Recipient | 2003 - 2004 |
| Early Family Scholarship Recipient | 2000 - 2004 |
| American Association of Physicists in Medicine Annual Meeting, Seattle, WA | |
| Young Investigator's Competition, Awarded 3 rd Place | 2005 |

LEADERSHIP AND COMMUNITY INVOLVEMENT

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| President, Computer Science and Engineering Graduate Student Association (CSE GSA) | 2006 - 2007 |
| Selected as WU CSE recruiting representative (one of three) at Midwest CS Teaching Conference & (one of two) at Big 10 Expo | 2006, 2007 |
| CRA-W Grad Cohort Workshop participant, Seattle, WA, San Francisco, CA | 2004, 2007 |
| Selected to host distinguished researchers, Dr. Jaiwei Han, Dr. Shlomo Zilberstein | 2006 |
| Introduction Leaders Program participant | 2004 - 2005 |
| Invited student representative (one of two) answering questions for and sharing experiences with prospective graduate students from Truman State | 2005 |
| Undergraduate Council student representative | 2003 - 2004 |

MEMBERSHIPS AND ASSOCIATIONS

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| Computing Research Association - Women Grad Cohort participant | 2004 - present |
| Tau Beta Pi member | 2004 - present |
| American Association of Physicists in Medicine (AAPM) student member | 2004 - 2006 |
| Association for the Advancement of Artificial Intelligence (AAAI) student member | 2007 - 2008 |

INTEGRATIVE MEDICINE

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| Ananda Jyotir Diksha Training, Aspen, Vail, CO & Barrington, IL | 2005, 2006 |
| Dhyana Spurana Program (DSP), Life Bliss Foundation, 2+ day training, St. Louis, MO | 2006 |
| Donna Eden and David Feinstein Energy Medicine Workshop, St Louis, MO | 2005 |
| Reconnective Healing Workshop, Levels I/II, Columbia, MO | 2000 |

COMPUTER EXPERTISE

Matlab, Java, C++, Intel x86 Assembly, HTML, XML, UNIX, and Scheme

INVITED PRESENTATIONS

Automated IMRT treatment planning using prioritized optimization. Department of Radiation Oncology, Stanford School of Medicine, Aug 2007.

Using the ORART toolbox. Web conference/demo for researchers at several Swedish Universities, May 2007.

Matlab Introductory Course, Department of Radiation Oncology, Washington University, Jan 2007.

PAPERS

Clark VH, Chen Y, Wilkens J, *et al.* IMRT treatment planning for prostate cancer using prioritized prescription optimization and mean-tail-dose functions. *Linear Algebra and its Applications.* 2008;428(issues 5-6):1345-1364.

Pallemulle SL, **Clark VH**, Goldman KJ. Supporting Live Development of SOAP and CORBA Clients. (Washington University, Department of Computer Science and Engineering. Technical Report, 2004), pp. TR-2004-2056.

Deasy JO, Blanco AI, **Clark VH**. CERR: A computational environment for radiotherapy research. *Medical Physics* 2003;30:979-985.

PROCEEDINGS

Clark V, Wilkens J, Chen Y, *et al.* Automated IMRT treatment planning using prioritized prescription optimization. In: Bissonnette J, editor. XVth International Conference on the Use of Computers in Radiation Therapy. Vol 1. Toronto, Canada: Novel Digital Publishing; 2007. pp. 227-231. [**Oral presentation**]

Clark V, El Naqa I, Lindsay P, *et al.* Going Beyond Dose-volume Constraints in Treatment Planning: Old and New Metrics for Judging Normal Tissue Complication Risks. In: Bissonnette J, editor. XVth International Conference on the Use of Computers in Radiation Therapy. Toronto, Canada: Novel Digital Publishing; 2007.

ABSTRACTS

Clark V, Chen Y, Wilkens J, *et al.* Automated Selection of Tradeoff Parameters in IMRT Prioritized Prescription Treatment Planning. *Medical Physics* 2007;34:2421-2421.

Deasy J, Khullar D, Apte A, *et al.* The computational environment for radiotherapy research: New tools for multi-modality imaging, treatment plan comparisons, and plan evaluations. *Medical Physics* 2006;33:2140-2140.

El Naqa I, **Clark VH**, Chen Y, *et al.* Treatment outcome-based objective functions for IMRT treatment planning. *International Journal of Radiation Oncology Biology Physics* 2006;66:S687-S688.

Clark V, El Naqa I, Hope A, *et al.* Can dose-volume parameters be replaced with GEUD in the treatment planning process? *Medical Physics* 2006;33:2294-2294. [**Oral presentation**]

Clark V, Alaly J, Zakarian K, *et al.* Automated beam direction selection for IMRT based on geometrical concepts of viewability and orthogonality. *Medical Physics* 2005;32:1890-1890. [**Oral presentation, won 3rd place Young Investigator Award**]

ABSTRACTS continued

El Naqa I, **Clark V**, Bradley J, *et al.* Machine learning methods for radiobiological outcomes modeling. *Medical Physics* 2005;32:2037-2037.

Clark V, Deasy J. A greedy set cover algorithm for the IMRT beam selection problem. *Medical Physics* 2004;31:1855-1855. [*Poster presentation*]

PRESENTATIONS

Clark V, Wilkens J, Chen Y, *et al.* Automated IMRT treatment planning using prioritized prescription optimization. In: Bissonnette J, editor. XVth International Conference on the Use of Computers in Radiation Therapy. Vol 1. Toronto, Canada: Novel Digital Publishing; 2007. pp. 227-231.

Clark V, Radiation therapy optimization. Computer Science and Engineering Doctoral Student Seminar, Washington University, Sep 2006.

Clark V, IMRT Optimization Problem Formulation. Artificial Intelligence Research Seminar, Washington University, Feb 2006.

Clark V, El Naqa I, Hope A, *et al.* Can dose-volume parameters be replaced with GEUD in the treatment planning process? *Medical Physics* 2006;33:2294-2294.

Clark V, Beam Direction Selection for Intensity-Modulated Radiation Therapy. Computer Science and Engineering Doctoral Student Seminar, Washington University, Dec 2005.

Clark V, Alaly J, Zakarian K, *et al.* Automated beam direction selection for IMRT based on geometrical concepts of viewability and orthogonality. *Medical Physics* 2005;32:1890-1890. [*Won 3rd place Young Investigator Award*]

Clark V, Overview of several published primal-dual algorithms. Algorithms Research Seminar, Washington University, Spring 2005.