22 FACULTY MEMBERS
8 Professors
(1 Eminent Scholar, 2 Endowed Chairs)
6 Associate Professors
3 Assistant Professors
5 Lecturers

25 Adjunct/thesis Faculty
5 Adjunct courses/semester

http://www.cs.odu.edu
346 undergraduate majors
121 graduate students
Departmental Administration

Chair: Desh Ranjan
Assistant Chair & Chief Undergraduate Advisor: Janet Brunelle
Director of Computer Resources: Ajay Gupta

Assistant Chair: Irwin Levinstein

Graduate Program Director: PhD program Mohammad Zubair
Graduate Program Director: MS program Ravi Mukkamala
Enrollment Comparisons
Students/course - Fall

![Bar graph showing enrollment comparisons for different courses and years.](image-url)
SCH/Semester Students

Year | SCH/Semester Students
---|---
2006 | 7000
2007 | 6000
2008 | 5000
2009 | 4000
2010 | 3000
Irwin Levinstein: Intelligent Tutoring

Improving reading by interactive teaching of reading strategies

Use of games in tutoring
web science & digital library research

research:
- web science, social media, semantic web
- interoperability, architecture, protocols
- digital libraries, preservation, repositories

funding:
- PI or Co-PI on 14 grants, > $6.4M USD since 2001
- NASA, NSF, Library of Congress, Andrew Mellon Foundation
- NSF Career Award 2007-2011

current phd students:
- 2 graduated; employed at Harding University & Emory University
- 7 current students in various stages
- research activity: ws-dl.blogspot.com

future phd students:
- publish in top conferences and travel to present your results
- collaborate with world renowned WS&DL researchers
- find quality academic & research positions after graduation

Michael L. Nelson
www.cs.odu.edu/~mln/
Computational Structural Bioinformatics
Jing He

Constrained Protein Structure Prediction

Image Processing

Parallel algorithms in protein folding

Data mining in Structure data

\[ U(r_m) = f_2 U_2 (r_m) + f_1 U_1 (r_m) \]

\[ = f_2 \cdot \frac{q (r_m) \pm p (r_m)}{q \mp p} + f_1 \cdot \frac{\frac{r_m}{r_m}}{q \# p} \]
• **Scienceweb**: qualitative query system of collaboratively built information network about science

• **Exploring social classification on a cloud**: Collaborative classification of large, growing collections with evolving facets

• **Automated metadata extraction**:

  7 grants, > $2 M USD since 2005
  NASA, NSF, DTIC, Andrew Mellon Foundation
Blue Waters will be installed at NCSA (UIUC) by 2011, $200M (IBM)  nikos@cs.odu.edu

High-End Computing: Nikos Chrisochoides

From Chip to Entire Integrated System

Blue Waters System

Building Block

SuperNode (32 nodes)

Drawer (8 nodes)

SMP node (4 chips)

P7 Chip (8 cores)

On-line Storage

Near-line Storage

Courtesy NCSA, UIC

Courtesy NCSA, UIC

Input queue

Output queue

Global directory

Local directory

Pending objects / handlers queue

Assembler / Terminator

Application input

Data Servers (DS)

Control Unit (CU)

Scheduler
First ever clinical study using volume tracking at BWH, Harvard Medical School and CRTC: Nikos Chrisochoides


nikos@cs.odu.edu
Parallel Mesh Generation: Nikos Chrisochoides

- **Performance**
  - Scalability (in terms of problem size and resources i.e., CPU, memory)
  - Wall clock time

- **Stability:** the elements of the global mesh should retain the same quality as the elements of sequentially generated meshes;
  - **no new small features** (e.g., angles, segments) due to parallelism

- **Code re-use:** leverage the ever evolving basic sequential meshing algorithms/software
  - Sequential industrial strength meshers take 100 man-years years to develop and they are open ended in terms quality, speed, and functionality

- **Application specific:** distribution of mesh points, gradation of elements and optimal size of mesh (real-time), multi-tissue, etc., ...

http://crtc.wm.edu/html_output/publications_by_subject.php nikos@cs.odu.edu
Computational analysis of spatiotemporal gene expression patterns to uncover the genomic regulatory networks in fruit-fly.

Learning fully automated, hierarchical, multi-instance, multi-task deep models for complex visual recognition tasks.
Computational Biology
Yaohang Li
http://www.cs.odu.edu/~yaohang

• Computational Protein Modeling

  Understand Protein Structures, Interactions, and Functions using Computational Approaches

Accurate Protein Energy Estimation

• Applications

  Protein Folding
  Protein-Ligand Docking
  Protein-Protein Interaction
  Inhibitor Design

Research supported by

Protein Folding
Protein-Ligand Docking
Protein-Protein Interaction
Inhibitor Design

Sampling Protein Conformation Space
Provide safety applications and traffic congestion notification to travelers using vehicular communication

NOTICE (funded by NSF, 2007-2011)

Prototype built using sensor motes to detect and communicate with passing vehicles.

Demo Video @
Privacy-preserving Data Mining (PPDM): developing algorithms to preserve privacy through data perturbation while retaining the underlying association rules.

Preserving Consistency and Security of Outsourced Data (over a cloud): employing signal-processing techniques for a client to ensure the correctness of outsourced data with minimal local overhead.

Tradeoff study: Model and analyze the tradeoffs among Computational cost, Storage cost, Throughput, Availability, Privacy and Security in an outsourced cloud environment. The study involves modeling different stakeholders (cloud owner, data owner, data miner, and the end user. The analysis includes probabilistic analysis, simulation, and empirical studies,
Privacy & Accuracy Options

- No $k$ (#bins).
- Predefined $k$.
- Exact $k$.

Modified Data

Data Mining

Results

Data Perturbation

Data Owner

Original

Binning

Privacy Preserving Mapping

Modified

Association Rules Clusters

Data Miner

Privacy & Accuracy Options

Modified Data

Data Mining

Results

Data Owner

Original

Binning

Privacy Preserving Mapping

Modified

Association Rules Clusters

Data Miner
Sensor networks

**ANSWER:** AutoNomouS netWorked sEnsoRs

An integrated multi-layer design methodology with cross-layer optimization for networking autonomous sensor systems will enable secure, QoS-aware information services to in-situ mobile users.

Funded by NSF 2007-2011

S. Olariu - [http://www.cs.odu.edu/~olariu](http://www.cs.odu.edu/~olariu)