The Digital Technology Center

Mission: To foster college-wide, breakthrough, inter-disciplinary research and partnerships for addressing the evolving challenges of our Digital Future

Oct. 21, 2016
Organizational chart

Director
Georgios B. Giannakis

Assoc. Director for Research
Zhi-Li Zhang

Assistant Director
Jeremy R. Jenkins

Industry Liaison
(Recruit Pending)

Research Associate
(Recently Open)

Research Associate
(Recently Open)

Facilities:
3,000 square meters
research offices, laboratories, conference rooms, auditorium
The Digital Technology Center

- **Research foci**
  - Graphics and visualization
  - Digital storage systems
  - Distributed robotics
  - Data science (mining, learning, SP)
  - Wireless communications and networking

- **Programs**
  - Externally sponsored projects
  - Internal seed funds; endowed chairs
  - Industry partnerships – Joint IP programs
  - I/UCRCs (Intelligent Storage, Robotics)

- **Education and outreach**
  - Student fellowships and internships
  - Research meetings and conferences
  - Summer schools
  - High-school student tours
Success stories since 2008

- Grew number of affiliated faculty by 25%  
  - 100+ PhD students, 20+ postdoctoral researchers, and 30+ visitors

- Fivefold increase of publications and patents filed per year as well as in proposal submissions, and funding  
  - Average of $3M per year in external funds ($10-20M proposed)

- Broadened research spectrum  
  - Chem.- environ.- and grid-informatics; renewables; big data

- Enhanced visibility to the community  
  - STEM project; robotic classes; bioinformatics summer school
Cross-departmental partnerships

- College of Science & Engineering
  - Aerospace, Astronomy, Biomedical, Bioproducts, Biosystems, Chemistry, CEMS, CSE, ECE, Math, Mechanical, Physics, SAFL

- College of Liberal Arts and Humphrey School of Public Affairs
  - Psychology; Institute of Global Studies

- Carlson School of Management and College of Design
  - Social Business Analytics; and Recommender Systems

- Academic Health Center
  - Biochemistry, Biology, Biophysics; Neuroscience; Nursing; Psychiatry

- Institute on the Environment
Current projects and FY 2016 highlights

- **NSF-RI-Large**: Robotic Network for ... Invasive Carp from Inland Lakes
  - PI: Prof. V. Isler; 4-co-PIs; $1.5M for 3 years

- **MN-DoT**: Comprehensive System Assessing Truck Parking Availability
  - PI: Prof. Papanikolopoulos (CS); $2M for 2 years

- **NSF-CyberSEES**: Tenable Power Distribution Networks with Renewables
  - PI: Prof. G. B. Giannakis (ECE); 4 co-PIs; $1M for 3 years

- **NSF-Medium**: Big Tensor Data: Identifiability and Inference
  - PI: Prof. N. Sidiropoulos (ECE); 3 co-PIs (UMN-CMU); $2M for 3 yrs

- **NIH**: Structural Equation Models for Gene Regulatory Networks
  - Co-PIs: C. Meyer-G. B. Giannakis (UMN+Miami); $2M for 4 years

- **FY2016**: DTC submitted 26 proposals totaling 8.2M; awards include
  - **NSF-CPS**: Traffic Control ... in Smart Cities” (PI: Papanikolopoulos)
Recent review meetings and conferences

Annual I/UCRC, MnDRIVE conferences:

2015 National Conversation: A Trusted Cyber Future
Industry partnerships

- CRAY
- Hewlett Packard Enterprise
- IBM
- Dell
- Intel
- SGI
- NetApp
- Sentera
- SK Telecom
- Seagate
- Honeywell
- EMC²
- Veritas

- Affiliates; STTR/SBIR; I/UCRC; internships
NIH-NSF: Univ. of Minnesota Summer Bioinformatics Institute

- PI: Prof. Yiannis Kaznessis, CEMS: $600K
- Undergraduate level education and research experiences in bioinformatics and computational biology
Ongoing outreach efforts

- Robotics Tech Camp
- Lab tours for middle and high school students
Rest of today’s agenda

- Robotics Tech Camp (Asst. DTC Dir. Jeremy Jenkins)
- I/UCRC on Digital Storage (Prof. David Du)
- I/UCRC on ROSE-HUB (Dr. Vassilios Morellas)
- Robotics and the Environment – Isler Group (Patrick Plonski)
- 12:00-12:30pm: Short videos and Demos
- 12:30-1:15pm: Lunch and posters
- 1:15-1:30pm: PowerWall Demo (Prof. Vipin Kumar)