Institute of Computing
Education and Research – back, now and then

Prof. Dr. Anderson Rocha (Director)
Prof. Dr. Leandro Villas (Associate Director)
Institute of Computing
Education and Research – back, now and then

Prof. Dr. Anderson Rocha (Director)
Prof. Dr. Leandro Villas (Associate Director)

Institute of Computing
University of Campinas (Unicamp)

Av. Albert Einstein, 1251 – Cidade Universitária
CEP 13083–970 • Campinas/SP – Brasil
Campinas, Unicamp, and the Institute of Computing
Where are we?
Where are we?

~2.6 Million People (Metro Region)  9th

~20 Million People (Metro Region)  1st
Campinas
“The Brazilian Silicon Valley”
Unicamp

1,900+ Faculty
8,000+ Staff

36,000+ Students
17,000+ Grad
19,000+ Undergrad

#1 University in Patent Filings
#1 pub/professor rate

Annual Budget
~0.9 Billion USD
Who are we?
The Institute of Computing

- Undergraduate Courses
  Computer Science & Computer Engineering

- Almost 50-year old
  Computer Science Course

- Graduate Courses
  Masters and Ph.D. in Computer Science

Strong International Collaboration
Fact Sheet

Graduate Continued Education Courses

Software Engineering

Reasoning for Complex Data

Computer Networks

Internet of Things
Fact Sheet

1

First undergraduate CS program in Brazil: **1969**

Ranked among **top CS/CE programs** in Brazil

**Faculty**

Most are CNPq Research Awardees

**Extensive Collaboration with Industry**

Microsoft, Intel, IBM, Petrobras, Google, LG, Samsung, Motorola, Lenovo, among others

**Numerous Awards**

Best theses, dissertations, papers
Prestige Capes!
Concentration Areas

Theory of Computing
- Algorithms & Optimization
- Bioinformatics & Computational Biology
- Graphs & Combinatorics
- Combinatory Optimization

Information Engineering
- Visual Computing
- Information Systems
- Reasoning for Complex Data

Computer Systems
- Computer Systems Design
- Computer Networks
- Security and Applied Cryptography
- Distributed Systems
The Institute of Computing

- Data Science & Engineering
- Software Engineering
- Data Mining
- Human-Computer Interaction
- Algorithms & Graph Theory
- Combinatorics & Optimization
- Computational Biology
- Hardware-Software Codesign
- Computer Architecture
- VLSI Design
- Compilers
- Parallel Computing
- Artificial Intelligence
- Machine Learning
- Big Data

- Wearable Computing
- Distributed Systems
- Computer Networks
- Cloud Computing
- Sensor Networks
- Natural Language Processing
- Cryptograph
- Computer Security
- Computer Graphics
- Computer Vision
- Digital Forensics
- Information Retrieval
- Image Processing
- e-Science
- Robotics
Research Labs.
Impact

R$ 50 Million

Fapesp Thematic

10 Projects with the Industry
Highlights

- **Open-Set & Meta-Recognition**
- **Image Forest Transform**

- **Intl. Competition on Melanoma Detection**

- **Non-separating Planar Chains in 4-Connected Graphs**

- **Engineering Art Galleries**

- **Research on Optimization** (e.g., Taxi and Ride Sharing)

- **open source initiative**

- **Implementation of Spelling Checkers**

- **Tomasz Kowaltowski**
  Cláudio L. Lucchesi
Highlights

- National Order of Scientific Merit
  Tomasz Kowaltowski
  Cláudio L. Lucchesi
  Claudia M. Bauzer Medeiros

- Reliable Routing Approach for In-Network Aggregation in Wireless Sensor Networks
  López-Dahab
  Cryptographic Method

- Seismic Data Processing

- Visual Analysis of Document Collections – Phylogenetic Trees

- Applying new technologies for plant monitoring

- Scheduling in Hybrid Clouds
Projects

WASIS – Wildlife Animal Sound Identification System

Diabetic Retinopathy Detection

Sensitive Media Analysis
Projects

Petrobras High-performance Computing

Shell Seismic 4-D Analysis

ERC FAPESP/Equinor
Data-driven technologies for oil-recovery
Projects

Thematic Fapesp

Sistemas Socioenativos

Thematic & PIPE Fapesp

AnimaLS

DARPA MediFor

European Union H2020

Cutting and Packing Problems
Competitions & Contests

Innovative student projects engaged in international competitions

- ACM Programming Contest
- ImagineCup
- Google Summer of Code

Faculty with strong leadership organizing Local Chapters

Prof. Ricardo Anido
- Brazilian Olympiad in Informatics

Prof. Rodolfo Azevedo
- Brazilian Programming Contest
- Summer School for the Programming Contest

Prof. Esther Colombini
- Brazilian Robotics Olympiad
1,200 Students
Graduates/Year

300

90 Undergrads | 40 MSc. | 20 Ph.D. | 150 Cont'd Education
Enrollment Numbers

Undergraduate Studies
- Computer Engineering: 520
- Computer Science: 250

Graduate Studies
- M.Sc.: 150
- Ph.D.: 170

Continued Education
- Complex Data: 40
- Software Eng.: 60
- Networks: 45
- IoT: 50
Alumni

Bachelor Alumni

- Computer Science: 2100
- Computer Engineering: 1575
- Bachelor Alumni: 1050

Graduate Alumni

- Ph.D: 800
- M.Sc: 1275
- Graduate Alumni: 1700

Continued Education

- Continued Education: 1700
... and they fly
Where do they go?

**Hired** by Corporations
- Intel, Microsoft, Google, Facebook, IBM, AMD,
- Motorola, Samsung, LGE, etc.

**Founded** their own companies
- CI&T, Compera, MeuCarrinho, Pro-Fusion, among others

**Joined** other universities for further studies
- Princeton, Yale, Cornell, CalTech, Cambridge, UCLA,
- UC Irvine, Columbia, etc.

**Joined other universities as professors**
- Top universities in Brazil, Canada, U.S., UK, France, Germany,
- Australia, Argentina, among others.
Innovation Impact

“Unicamp children”

Entrepreneurship
Economic Motors
Startups!
Unicorns!
Economy Motors!
+1.5 billion USD
Worldwide Players!
Institute of Computing
Education and Research – back, now and then
PARTNERSHIP
FUTURE
CShub
Computer Science Hub
Partnerships
Stronger Impact & Innovation
Obrigado!

Thank you!
Image Credits

- J.R. Furlan took the **Marvelous** Photographs of Unicamp and IC/Unicamp
- Remaining images are labeled for **non-commercial re-use**
Institute of Computing
Education and Research – back, now and then

Prof. Dr. Anderson Rocha (Director)
Prof. Dr. Leandro Villas (Associate Director)