



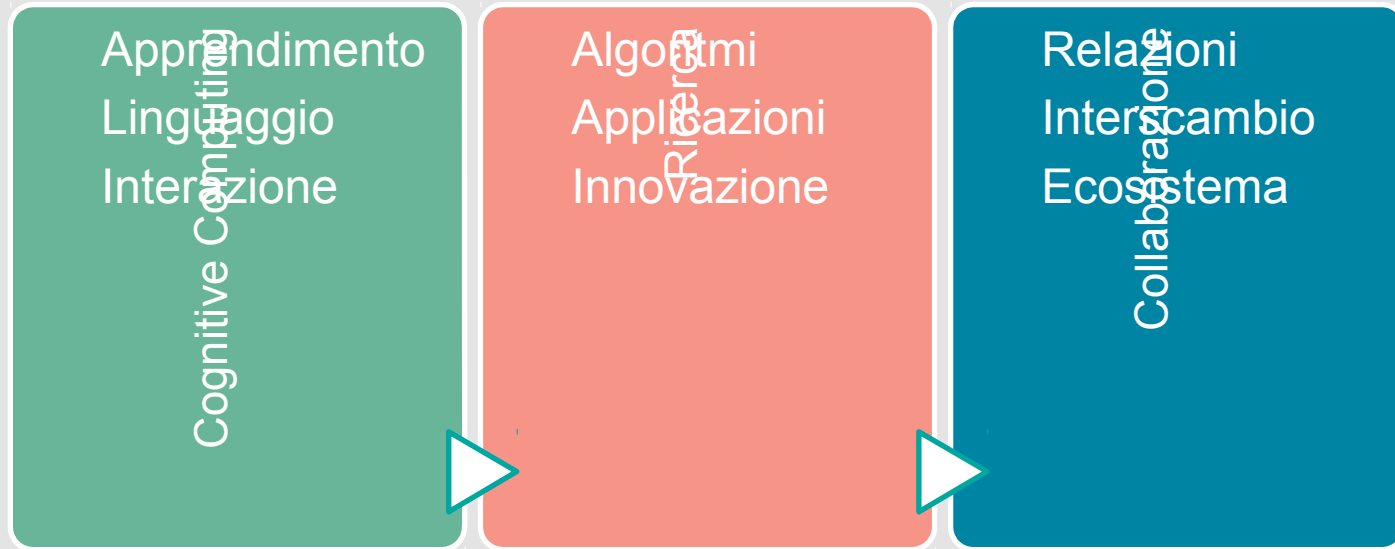
Ricerca ed Industria nell'Ecosistema del Cognitive Computing

Seminario "Cognitive Computing" @IBM - Università di Roma Sapienza

Guido Vetere | 28 Aprile 2016



Sommario



Cognitive Computing



Image 1

The Tabulating Era
(1900s–1940s)

The Programming Era
(1950s–present)

The Cognitive Era
(2011–)

Kelly, J. III, *Computing, cognition and the future of knowing. How humans and machines are forging a new age of understanding*, 2015
http://www.research.ibm.com/software/IBMResearch/multimedia/Computing_Cognition_WhitePaper.pdf



Cognitive Computing

Man-computer symbiosis is an expected development in cooperative interaction between men and electronic computers. It will involve very close coupling between the human and the electronic members of the partnership

let computers facilitate formulative thinking as they now facilitate the solution of formulated problems

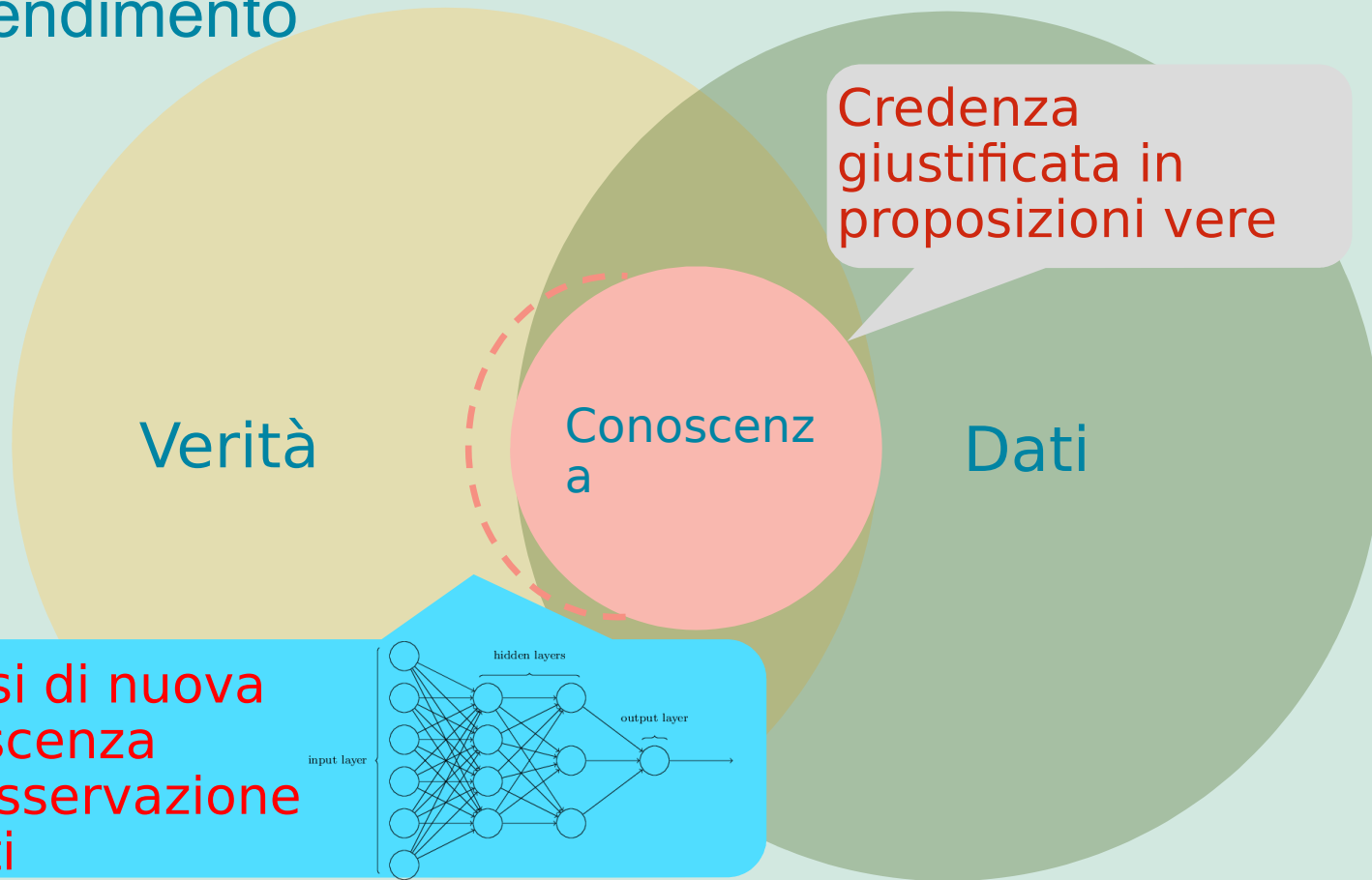
enable men and computers to cooperate in making decisions and controlling complex situations without inflexible dependence on predetermined programs



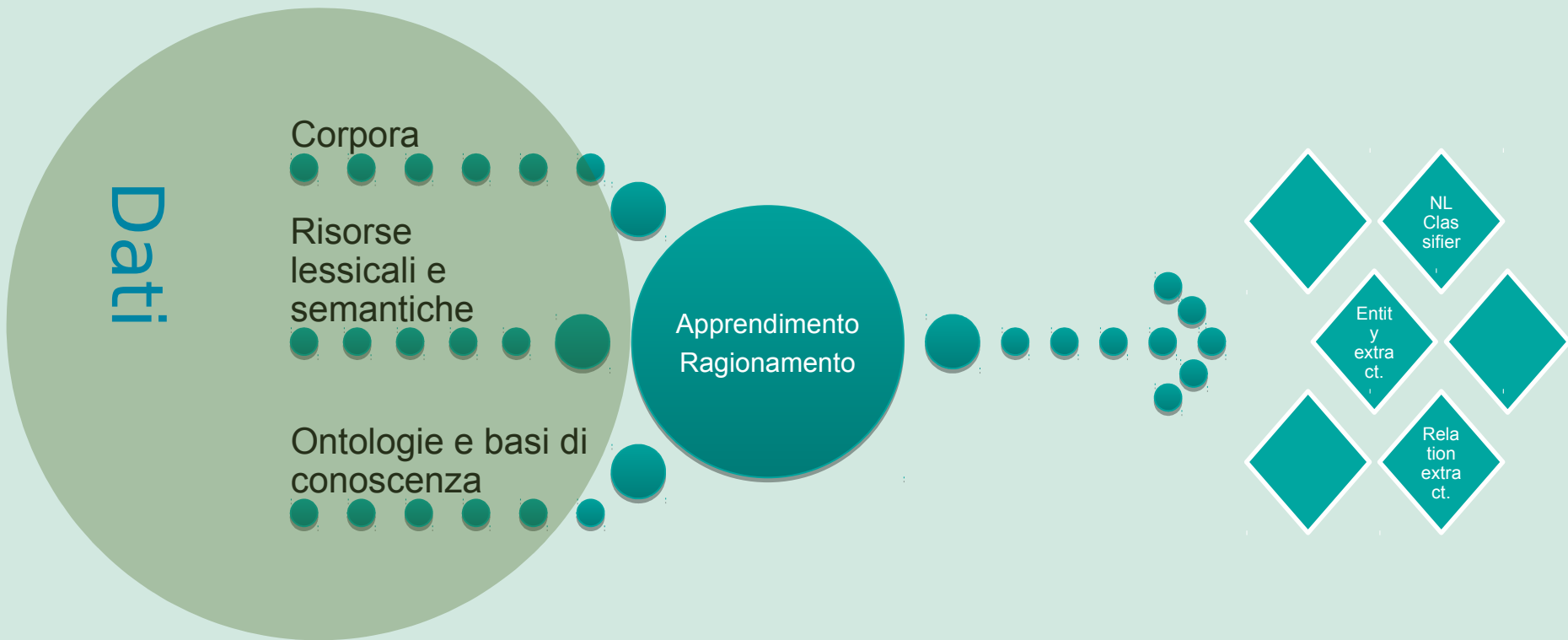
Licklider, J. *Man-Computer Symbiosis*, 1960
<http://groups.csail.mit.edu/medg/people/psz/Licklider.html>



Apprendimento



Linguaggio



Interazione

hi

Hi there. How are you today?

sad

I'm sorry to hear that. How can I help you?

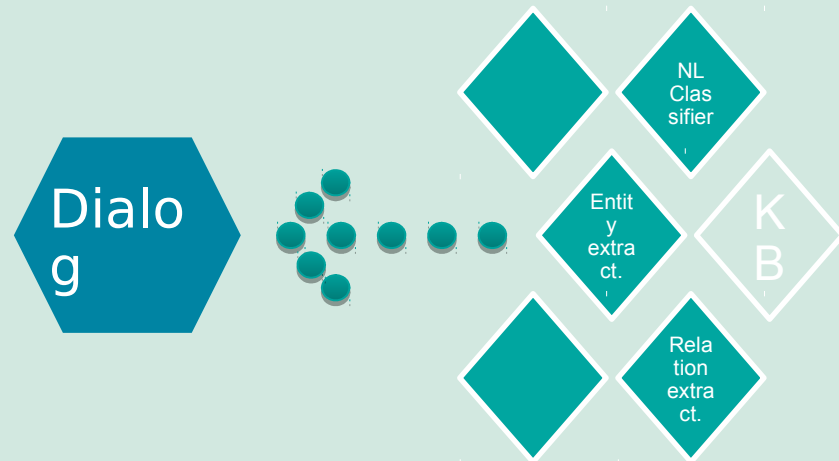
I'd like to see a movie

Current movies or upcoming movies?

Current movies, of course

Are you in the mood for a specific genre?

yes, something funny



Ricerca e sviluppo

5.7 B\$ in R&D (6% del fatturato)

13 centri di Ricerca in **6** continenti,

6 premi Nobel

23 anni consecutivi leader nei brevetti

7.355 brevetti U.S. nel 2015

8.500 IBM inventori in 43 paesi



Algoritmi

Data mining and
pattern
recognition

Semantic data
curation and
deep knowledge
representation

Large scale
machine
learning

Reasoning,
planning,
decision making

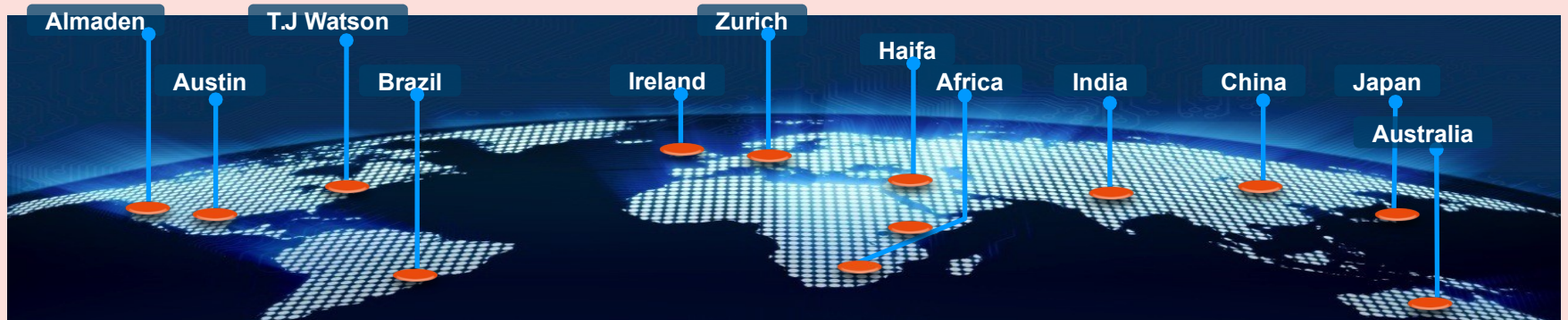
Multilingual
natural
language
processing and
speech

Conversational
dialogue

Narrative
generation

Machine vision

Emotional
interacion



Applicazioni in Sanità

Watson for Healthcare

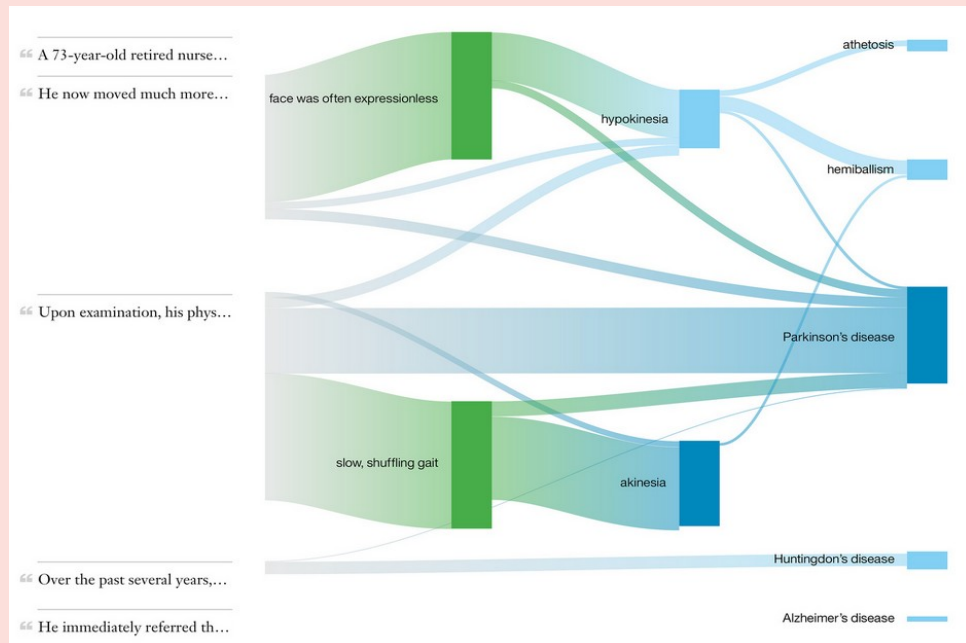
Wellness

Care

Diagnosis

Clinical Trials

www.ibm.com/smarterplanet/us/en/ibmwatson/health/



WatsonPaths

A new cognitive computing project that enables more natural interaction between physicians, data and electronic medical records.



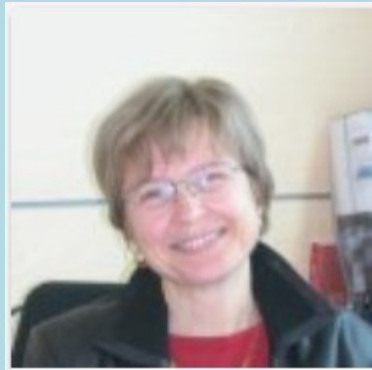
Innovazione

The IBM Research THINKLab is a place for leading companies to work with IBM researchers and scientists to solve the world's toughest problems

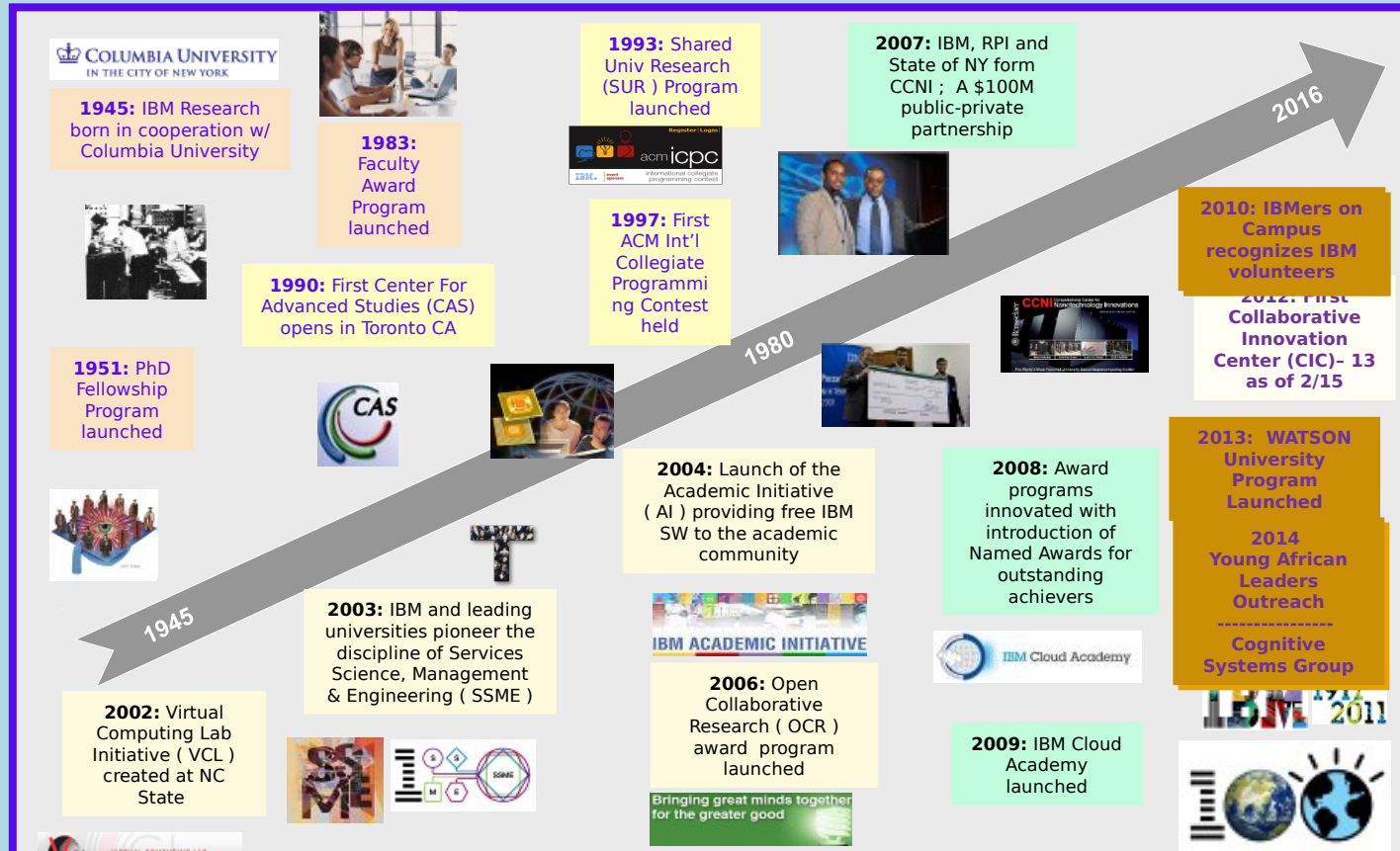
www.research.ibm.com/thinklab/



70 anni di collaborazione con le Università



Carla Milani,
University Relations
Manager
carla_milani@it.ibm.com



Relazioni universitarie di IBM – gli imperativi

- **RESEARCH:** promoting collaborative research on grand challenges and IBM big bets
 - ➔ Via awards programs & access to IBM research
- **READINESS:** enabling skill development for the 21st century and beyond (BAO, Cybersecurity, etc.)
 - ➔ Via access to IBM tools, methods and course materials on the IBM Academic Initiative
- **RECRUITING:** contributing to IBM's talent pipeline with the best and brightest skilled in areas important to IBM and our clients
 - ➔ Via PhD Fellowships, Research Intern Programs (Great Minds), Student Competitions (ACM, MTM) and partnering on existing IBM HR sponsored programs (Brand/Career Exploration Virtual Events)
- **REVENUE :** seeding sales opportunities that evolve naturally as a by-product of research engagements, regional economic development initiatives or a need for Blue Gene class computer power
- **RESPONSIBILITY:** supporting community service by providing access to IBMers' expertise, knowledge, and talents
 - ➔ Via IBM employees sharing time & expertise w/ universities through guest lectures, judging student competitions, adjunct faculty positions, students for a smarter plant coalition, STEM outreach, mentorships, etc.
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 - ➔ Via university based incubators (CAS), IBM Global Entrepreneur Program & Smart Camps, Smarter Cities Challenge, regional competitions



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Building skills for a Smarter Planet



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The explosion of Internet of Things, cognitive computing, mobile, and big data drives the need for flexible cloud platforms to enable innovation. In an [exclusive new offer for members](#), faculty and students can use IBM Bluemix, an open-standards-based platform, to rapidly build apps with no charges and no credit cards for 6 or 12 months of access that can be renewed as needed.

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Congratulate the IBM Watson University Competition winners

Student-entrepreneur teams from 8 universities applied Watson technologies to solve industry-specific challenges. The winning team from the University of Texas at Austin received \$100,000 in seed funding to help launch their startup company, CallScout, based on their Watson app, which offers improved citizen services. The CallScout team is now part of the [IBM Global Entrepreneur Program](#).

▶ Watch all 8 schools' videos

→ Bring Watson to your university

→ Read about the competition results

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Build platform-as-a-service skills



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▶ Discover more about the program (178KB)

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→ Member login

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Use our courseware

Teaching materials for IBM products, open source technologies, tools



Access IBM software and systems

Hundreds of IBM products, virtual access to IBM systems and solutions

Meet Watson



Academic Initiative \ Cognitive Computing

Cognitive computing



Cognitive computing systems learn and interact naturally with people to extend what either humans or machines could do on their own. They help human experts make better decisions by penetrating the complexity of large amounts of structured and unstructured data to arrive at findings in a fraction of the time normally required. Students with cognitive-computing-systems skills will be poised for the next generation of computing.

Recommended products: Watson Engagement Advisor, Watson Developer Cloud

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Learning resources

- [Faculty guide: Cognitive Computing](#)
- [Getting Started using Watson Engagement Advisor: Guide and Videos](#)
- [Raising the game -- The 2014 IBM Business Tech Trends Study](#)
- [Faculty Guide: Watson services on IBM Bluemix](#)

→ [View more](#)

Courseware

- [Cognitive Systems Institute courses](#)

Certifications

No resources found

Community

- [How college students and Watson can help change the world](#)
- [Request to bring Watson to your university](#)
- [Join the Cognitive Systems Institute Group \(CSIG\) on LinkedIn](#)
- [Watson developer forum](#)

→ [View more](#)

Software

- [Watson Developer Cloud](#)
- 📄 [Watson Explorer Advanced Edition](#)

Support

- [IBM Academic Initiative support](#)

<https://developer.ibm.com/academic/resources/category/cognitive/>



Cognitive Systems Institute Group (CSIG)

Research

IBM Research Led Relationships with Top Universities

300+ University Researchers interested in working with IBM in Cognitive Systems

Go to CSIG Website <http://cognitive-science.info/>

Join [CSIG LinkedIn Discussion Group](#)

Prepare aligned research proposals for government/foundation grants

Attend/present on weekly Speaker Series Calls (Thursdays 10:30am ET USA)

Contribute to Point of View Papers

Academic Programs

Multiple offerings for teaching students about Watson

Watson services on Bluemix



IBM e la ricerca collaborativa

IBM Faculty Award Program

<https://www.ibm.com/developerworks/university/facultyawards/>

IBM Open Collaborative Research Award Program

<https://www.ibm.com/developerworks/university/collaborativeresearch/ocr.html>

IBM Shared University Research Award Program

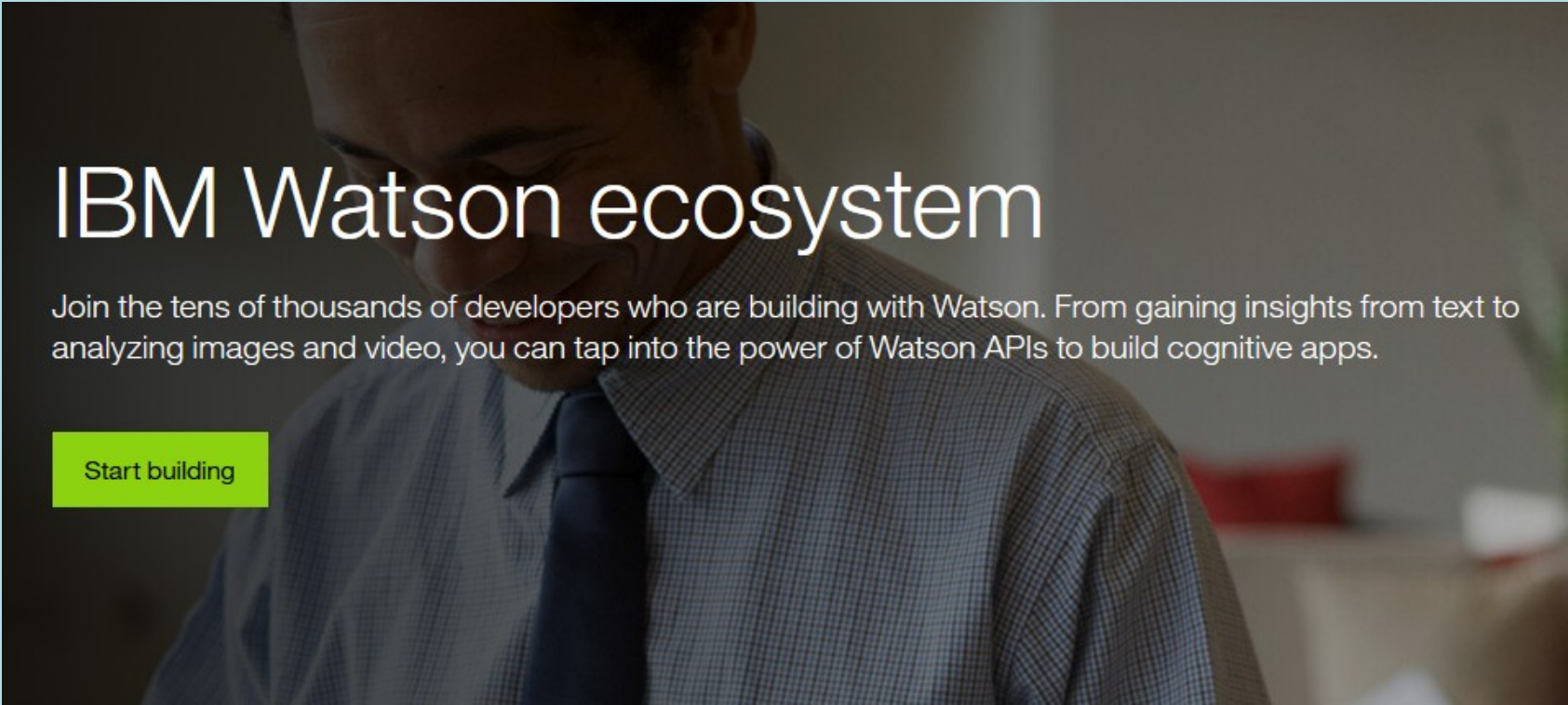
<http://www.ibm.com/developerworks/university/sur/index.html>

IBM PhD Fellowship Program

<https://www.ibm.com/developerworks/university/phdfellowship/>



Ricerca e industria nei nuovi ecosistemi



IBM Watson ecosystem

Join the tens of thousands of developers who are building with Watson. From gaining insights from text to analyzing images and video, you can tap into the power of Watson APIs to build cognitive apps.

Start building

