

Proseminar *Turing Award Winners* Einführungsveranstaltung

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(Software Modeling and Verification)



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`http://www-i2.informatik.rwth-aachen.de/i2/turing12/`

19. Oktober 2012

- 1 Einführung
- 2 Termine
- 3 Die Preisträger

Turing Award

- Preis der US-amerikanischen **Association for Computing Machinery (ACM)**
- seit **1966** jährlich vergeben
- Kandidaten: “individual selected for contributions of a technical nature made to the computing community”
- Kriterien: **Bedeutung** und **Nachhaltigkeit** der wissenschaftlichen Beiträge
- gilt als **höchste Auszeichnung** in der Informatik
($\approx$ Nobelpreis, Fields-Medaille)



Informationen über Preisträger

- Lebenslauf
- wichtigstes Forschungsergebnisse
- Bedeutung für das Fach Informatik

Ziele des Proseminars

- Selbständiges Einarbeiten in ein neues Thema
- Literaturrecherche
- Darstellen des Inhalts in einer **wissenschaftlichen** Ausarbeitung
- Verständliches Präsentieren

Ausarbeitung

- Selbständiges Verfassen einer **ca. 15-seitigen** Ausarbeitung
- **Vollständiges** Literaturverzeichnis
- Korrektes Zitieren
- **Plagiarismus:**
Die nicht gekennzeichnete Übernahme fremder Inhalte führt zum **sofortigen Ausschluss**.
- Schriftgröße **11pt**, übliche Seitenränder
- Titelseite mit Thema, Titel Proseminar, Semester, Name, Datum
- **Sprache** Deutsch oder Englisch
- **Korrekte Sprache** wird vorausgesetzt:
 ≥ 10 Fehler pro Seite $\implies$ Abbruch der Korrektur

Vortrag

- 30-minütiger Vortrag
- Zielgruppengerechte Präsentation der Inhalte
- Übersichtliche Folien:
 - ≤ 15 Textzeilen
 - sinnvoller Einsatz von Farben
- Vortrag in Deutsch oder Englisch

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Einführung in die Literaturrecherche

- Einweisung in themenspezifische Literaturrecherche
- Dauer: ca. zwei Stunden
- Teilnahme **für BSc-Studierende verpflichtend**
- Termine zur Auswahl:
 - Dienstag, 23.10.2012, 15:30-17:30
 - Dienstag, 30.10.2012, 15:30-17:30
 - Mittwoch, 07.11.2012, 13:00-15:00

Deadlines

Folgende Termine sind **einzuhalten**:

- 09.11.2012: letzte Rücktrittsmöglichkeit
- 12.11.2012: Vorlage der Gliederung
- 03.12.2012: erste Fassung der Ausarbeitung
- 17.12.2012: endgültige Fassung der Ausarbeitung
- 28.01.2013: endgültige Fassung der Folien
- 04./05.02.2013: Blockseminar

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Auszeichnung

For fundamental contributions to artificial intelligence through the development of a calculus for probabilistic and causal reasoning.

Forschungsgebiete

- Analysis of Algorithms
- Artificial Intelligence

Leslie Garbriel Valiant

(USA, 2010)



Auszeichnung

For transformative contributions to the theory of computation, including the theory of probably approximately correct (PAC) learning, the complexity of enumeration and of algebraic computation, and the theory of parallel and distributed computing.

Forschungsgebiete

- Artificial Intelligence
- Computational Complexity
- Machine Learning
- Theory of Parallel Computation



Auszeichnung

For the pioneering design and realization of the first modern personal computer – the Alto at Xerox PARC – and seminal inventions and contributions to local area networks (including the Ethernet), multiprocessor workstations, snooping cache coherence protocols, and tablet personal computers.

Forschungsgebiete

- Computer Architecture
- Personal Computing



Auszeichnung

For contributions to practical and theoretical foundations of programming language and system design, especially related to data abstraction, fault tolerance, and distributed computing.

Forschungsgebiete

- Operating Systems
- Programming Languages



Auszeichnung

For their role in developing Model-Checking into a highly effective verification technology that is widely adopted in the hardware and software industries.

Forschungsgebiete

- Verification of Hardware and Software Models

Frances Elizabeth Allen

(USA, 2006)



Auszeichnung

For pioneering contributions to the theory and practice of optimizing compiler techniques that laid the foundation for modern optimizing compilers and automatic parallel execution.

Forschungsgebiete

- Compilers



Auszeichnung

For fundamental contributions to programming language design and the definition of Algol 60, to compiler design, and to the art and practice of computer programming.

Forschungsgebiete

- Programming Languages

Vinton G. Cerf/Rober E. Kahn

(USA/USA, 2004)



Auszeichnung

For pioneering work on internetworking, including the design and implementation of the Internet's basic communications protocols, TCP/IP, and for inspired leadership in networking.

Forschungsgebiete

- Internet Communications



Auszeichnung

For pioneering many of the ideas at the root of contemporary object-oriented programming languages, leading the team that developed Smalltalk, and for fundamental contributions to personal computing.

Forschungsgebiete

- Personal Computing
- Programming Languages

L.M. Adleman/R.L. Rivest/A. Shamir

(USA/USA/IL, 2002)



Auszeichnung

For their ingenious contribution to making public-key cryptography useful in practice.

Forschungsgebiete

- Cryptography

Ole-Johan Dahl/Kristen Nygaard

(NO, 2001)



Auszeichnung

For ideas fundamental to the emergence of object oriented programming, through their design of the programming languages Simula I and Simula 67.

Forschungsgebiete

- Object-Oriented Programming



Auszeichnung

In recognition of his fundamental contributions to the theory of computation, including the complexity-based theory of pseudorandom number generation, cryptography, and communication complexity.

Forschungsgebiete

- Cryptography

Frederick Brooks

(USA, 1999)



Auszeichnung

For landmark contributions to computer architecture, operating systems, and software engineering.

Forschungsgebiete

- Computer Architecture
- Operating Systems
- Software Engineering

James Nicholas Gray

(USA, 1998)



Auszeichnung

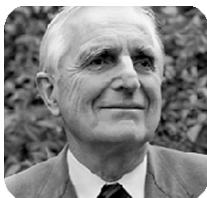
For seminal contributions to database and transaction processing research and technical leadership in system implementation.

Forschungsgebiete

- Databases

Douglas Engelbart

(USA, 1997)

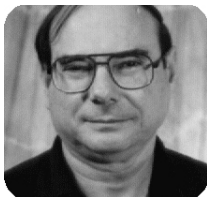


Auszeichnung

For an inspiring vision of the future of interactive computing and the invention of key technologies to help realize this vision.

Forschungsgebiete

- Interactive Computing



Auszeichnung

For seminal work introducing temporal logic into computing science and for outstanding contributions to program and system verification.

Forschungsgebiete

- Program Verification



Auszeichnung

In recognition of his contributions to the foundations of computational complexity theory and its application to cryptography and program checking.

Forschungsgebiete

- Computational Complexity
- Cryptography

Edward A. Feigenbaum/Dabbala R. Reddy

(USA/USA, 1994)



Auszeichnung

For pioneering the design and construction of large scale artificial intelligence systems, demonstrating the practical importance and potential commercial impact of artificial intelligence technology.

Forschungsgebiete

- Artificial Intelligence

Juris Hartmanis/Richard E. Stearns

(USA/USA, 1993)



Auszeichnung

In recognition of their seminal paper which established the foundations for the field of computational complexity theory.

Forschungsgebiete

- Computational Complexity

Butler W. Lampson

(USA, 1992)



Auszeichnung

For contributions to the development of distributed, personal computing environments and the technology for their implementation: workstations, networks, operating systems, programming systems, displays, security and document publishing.

Forschungsgebiete

- Personal Computing



Auszeichnung

For three distinct and complete achievements:

- ① LCF, the mechanization of Scott's Logic of Computable Functions, probably the first theoretically based yet practical tool for machine assisted proof construction;
- ② ML, the first language to include polymorphic type inference together with a type-safe exception-handling mechanism;
- ③ CCS, a general theory of concurrency.

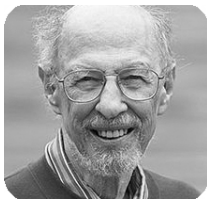
In addition, he formulated and strongly advanced full abstraction, the study of the relationship between operational and denotational semantics.

Forschungsgebiete

- Programming Languages
- Proof Construction

Fernando J. Corbato

(USA, 1990)



Auszeichnung

For his pioneering work organizing the concepts and leading the development of the general-purpose, large-scale, time-sharing and resource-sharing computer systems, CTSS and Multics.

Forschungsgebiete

- Computer Systems