La relación entre el Curriculum DL y las Ciencias de la Computación: una revisión bibliográfica
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__Apéndice III__
Detalle de las áreas de conocimiento con base en CS2013

Los profesionales de las Ciencias de Computación según la currícula que ha evolucionado de la ACM (propuestas del 2001, 2008, 2013) abarca una variedad de áreas, las cuales sirven como punto de partida para desarrollar una propuesta[1]. La ACM es una asociación norteamericana que agrupa profesionales, docentes y científicos cuyo objetivo es la difusión del conocimiento y patrocinio de eventos del área de computación y afines. A continuación se enumeran los catorce (14) tópicos principales (también llamadas áreas de conocimiento) en la ACM del 2013, los cuales no están destinados a que correspondan uno a uno con los planes de estudio de las carreras, ya que un curso puede tener múltiples áreas:

1. AL-Algorithms and Complexity
   a. Basic Analysis
   b. Algorithmic Strategies
   c. Fundamental Data Structures and Algorithms
   d. Basic Automata, Computability and Complexity
   e. Advanced Computational Complexity
   f. Advanced Automata Theory and Computability
   g. Advanced Data Structures, Algorithms, and Analysis
2. AR-Architecture and Organization
   a. Digital Logic and Digital Systems
   b. Machine Level Representation of Data
   c. Assembly Level Machine Organization
   d. Memory System Organization and Architecture
   e. Interfacing and Communication
   f. Functional Organization
   g. Multiprocessing and Alternative Architectures
   h. Performance Enhancements
3. CN-Computational Science
   a. Introduction to Modeling and Simulation
   b. Modeling and Simulation
   c. Processing
   d. Interactive Visualization Data, Information, and Knowledge
   e. Numerical Analysis
4. DS-Discrete Structures
   a. Sets, Relations, and Functions
   b. Basic Logic
   c. Proof Techniques
   d. Basics of Counting
   e. Graphs and Trees
   f. Discrete Probability
5. GV-Graphics and Visualization
   a. Fundamental Concepts
   b. Basic Rendering

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1 http://www.acm.org/education/curricula-recommendations
http://ai.stanford.edu/users/sahami/CS2013/
http://cs2013.org

     c. Geometric Modeling
     d. Advanced Rendering
     e. Computer Animation
     f. Visualization
6. HCI-Human-Computer Interaction
     a. Foundations
     b. Designing Interaction
     c. Programming Interactive Systems
     d. User-Centered Design & Testing
     e. New Interactive Technologies
     f. Collaboration & Communication
     g. Statistical Methods for HCI
     h. Human Factors & Security
     i. Design-Oriented HCI
     j. Mixed, Augmented and Virtual Reality
7. IAS-Information Assurance and Security
     a. Foundational Concepts in Security
     b. Principles of Secure Design
     c. Defensive Programming
     d. Threats and Attacks
     e. Network Security
     f. Cryptography
     g. Web Security
     h. Platform Security
     i. Security Policy and Governance
     j. Digital Forensics
     k. Secure Software Engineering
8. IM-Information Management
     a. Information Management Concepts
     b. Database Systems
     c. Data Modeling
     d. Indexing
     e. Relational Databases
     f. Query Languages
     g. Transaction Processing
     h. Distributed Databases
     i. Physical Database Design
     j. Data Mining
     k. Information Storage And Retrieval
     l. MultiMedia Systems
9. IS-Intelligent Systems
     a. Fundamental Issues
     b. Basic Search Strategies
     c. Basic Knowledge Representation and Reasoning
     d. Basic Machine Learning
     e. Advanced Search
     f. Advanced Representation and Reasoning
     g. Reasoning Under Uncertainty
     h. Agents
     i. Natural Language Processing
     j. Advanced Machine Learning
     k. Robotics

l. Perception and Computer Vision

10. NC-Networking and Communication
    a. Introduction
    b. Networked Applications
    c. Reliable Data Delivery
    d. Routing And Forwarding
    e. Local Area Networks
    f. Resource Allocation
    g. Mobility
    h. Social Networking

11. OS-Operating Systems
    a. Overview of Operating Systems
    b. Operating System Principles
    c. Concurrency
    d. Scheduling and Dispatch
    e. Memory Management
    f. Security and Protection
    g. Virtual Machines
    h. Device Management
    i. File Systems
    j. Real Time and Embedded Systems
    k. Fault Tolerance
    l. System Performance Evaluation

12. PBD-Platform-based Development
    a. Introduction
    b. Web Platforms
    c. Mobile Platforms
    d. Industrial Platforms
    e. Game Platforms

13. PD-Parallel and Distributed Computing
    a. Parallelism Fundamentals
    b. Parallel Decomposition
    c. Communication and Coordination
    d. Parallel Algorithms, Analysis, and Programming
    e. Parallel Architecture
    f. Parallel Performance
    g. Distributed Systems
    h. Cloud Computing
    i. Formal Models and Semantics

14. PL-Programming Languages
    a. Object-Oriented Programming
    b. Functional Programming
    c. Event-Driven and Reactive Programming
    d. Basic Type Systems
    e. Program Representation
    f. Language Translation and Execution
    g. Syntax Analysis
    h. Compiler Semantic Analysis
    i. Code Generation
    j. Runtime Systems
    k. Static Analysis
    l. Advanced Programming Constructs

     m. Concurrency and Parallelism

     n. Type Systems

     o. Formal Semantics

     p. Language Pragmatics

     q. Logic Programming

15. SDF-Software Development Fundamentals
    a. Algorithms and Design
    b. Fundamental Programming Concepts
    c. Fundamental Data Structures
    d. Development Methods

16. SE-Software Engineering
    a. Software Processes
    b. Software Project Management
    c. Tools and Environments
    d. Requirements Engineering
    e. Software Design
    f. Software Construction
    g. Software Verification and Validation
    h. Software Evolution
    i. Software Reliability
    j. Formal Methods

17. SF-Systems Fundamentals
    a. Computational Paradigms
    b. Cross-Layer Communications
    c. State and State Machines
    d. Parallelism
    e. Evaluation
    f. Resource Allocation and Scheduling
    g. Proximity
    h. Virtualization and Isolation
    i. Reliability through Redundancy
    j. Quantitative Evaluation

18. SP-Social Issues and Professional Practice
    a. Social Context
    b. Analytical Tools
    c. Professional Ethics
    d. Intellectual Property
    e. Privacy and Civil Liberties
    f. Professional Communication
    g. Sustainability
    h. History
    i. Economies of Computing
    j. Security Policies, Laws and Computer Crimes