Algorithms

- *Natallia Kokash, Joost Kok*
  - **1a. Visualization:** tree mapping using nested rectangles
  - **1b. Visualization:** generation of 3D schematic images for ontologies
- *Siegfried Nijssen*
  - **2a. Data mining:** conference mining
  - **2b. Data mining:** declarative data mining
  - **2c. Data mining:** visualization of binary matrices using mining algorithms
  - **2d. Data mining:** mining graphs with labels

Algorithms

- *Jan van Rijn, Jonathan Vis*
  - **3a. Games:** solving jungle checkers
- *Arie de Bruin, Siegfried Nijssen*
  - **4a. Visualization:** tree of life
- *Jonatha Vis, Joost Kok*
  - **5a. Visualization:** operations on strings
    Develop a visualization that shows how operations turn one string into another, with applications in bioinformatics

Algorithms

- *Michael Emmerich*
  - **6a. Natural computing:** robust optimization
  - **6b. Natural computing:** diversity optimization
  - **6c. Natural computing:** applying recent insights in biological evolution in evolutionary algorithms
  - **6d. Natural computing:** gradients in multiobjective optimization
  - **6e. Natural computing:** depot scheduling
  - **6f. Natural computing:** bicycle routing
  - ...

Algorithms

- *Michael Emmerich*
  - ...
  - **6g. Natural computing:** vehicle routing
  - **6h. Natural computing:** portfolio selection in molecular databases
  - **6i. Natural computing:** Design optimization
  - **6j. Natural computing:** Evolutionary algorithms for SPAM filtering
  - **6k. Natural computing:** Applying genetic algorithms and local search in Bitcoin mining
  - **6l. Natural computing:** Hypervolume subset selection

Computer Systems

- *Todor Stefanov*
  - **7a. Embedded systems:** modeling embedded systems using networks, graphs
  - **7b. Embedded systems:** analytical or simulation-based analysis of requirements
  - **7c. Embedded systems:** optimize system-on-chip performance, power consumption, …
  - **7d. Embedded systems:** program code analysis and transformations (parallelism)
  - **7e. Embedded systems:** mapping code onto embedded systems (code generation, scheduling, ...)

Computer Systems

- *Harry Wijshoff, Kristian Rietveld*
  - General directions: compilers, high performance code, code porting, networks
  - **8a. HPC:** Porting “SMACK” to an X86 architecture
  - **8b. HPC:** Involvement in the “Leiden Zipper” connecting two cluster computers

Foundations of Software Systems

- *Marcello Bonsangue, Jurriaan Rot*
  - **9a. Formal languages:** Kleene Algebra of Test extensions of regular expressions
  - **9b. Formal languages:** Parsing Boolean Grammars
  - **9c. Formal languages:** Transforming streams of numbers
  - **9d. Formal languages:** Bisimulation for proving language equivalence
- *Farhad Arbab*
  - **10a. HPC:** adapt proto-runtime so that it operates on Kalray processors
  - **10b. HPC:** adapt V8 Javascript to proto-runtime
  - **10c. HPC:** evaluate proto-runtime on Dutch supercomputer
  - **10d. HPC:** use Rascal meta environment to implement parallel language
  - **10e. Editors:** Develop Eclipse GUI for Reo
  - **10f. Editors:** Implement editor for constraints in Eclipse
  - **10g. Cloud computing:** Develop Java library for deploying Jar files on Amazon

Foundations of Software Systems

- *Frank de Boer, Marcello Bonsangue*
  - **11a. Checking:** generate test input for Java programs
  - **11b. Checking:** check recursive programs over finite data
- *Farhad Arbab, Marcello Bonsangue*
  - **12a. Checking:** check programs at runtime (monitor), either coordination software, circuits, or Java
- *Jetty Kleijn*
  - **13a. Petri nets:** algorithms for boundedness, finiteness and coverability of Petri nets
  - **13b. Petri nets:** explore connections between set nets, developed for studying reaction systems, and petri nets
  - **13c. Petri nets:** study petri nets as models for real-life phenomena
  - **13d. Team automata:** implement compatibility checks
  - **13e. Languages:** development of a “Financial product Markup Language”
  - **13f. Languages:** test the adequacy of “Business Process Modeling Notation”

Imagery & Media

- *Kathy Wolstencroft*
  - **14a. Biological workflows:** integrate tools developed in workflow engines
  - **14b. Biological workflows:** create user interfaces for the combination of Anni text mining, web services, and workflows
- *Fons Verbeek*
  - **15a. Visualization:** visualising and navigating through biological models using cytoscape and systems biology graphical notation (SBGN)
  - **15b. HPC:** mapping bioinformatics tools to cluster @ Leiden
  - **15c. Image processing:** develop infrastructure for 3D modeling
- *Nies Huijsmans*
  - **16a. Data mining:** linking people in historical documents based on time and space attributes

Imagery & Media

- *Michael Lew:*
  - **17a. Data mining:** video recommendation
  - **17b. Data mining:** summarize posts on social media
  - **17c. Data mining:** learn visual concepts interactively
  - **17d. Imaging:** create 3D worlds of unlimited size
  - **17e. Imaging:** create 3D worlds based on models of nature
  - **17f. Imaging:** crowds in virtual worlds
  - **17g. Imaging (& data mining):** image near copy detection
  - **17h. HPC:** efficient cryptography for image downloading
  - **17i. Imaging:** how to represent video for browsing
  - **17j. Imaging (& data bases):** how to query in SQL for images?
  - **17k. Imaging (& Visualization):** search for images in 3D

Technology & Innovation Management

- *Bernhard Katzy, Christoph Stettina*
  - **18a. Cloud computing:** mobile services in the cloud
  - **18b. User interfaces:** add a tour of The Hague to an app
  - **18c. Software engineering:** how do organizations implement agile methods through coaching?
- *Bernhard Katzy, Ozgur Dedehayir*
  - **19a. Organizations:** apply theories for intraorganizational relationships to interorganizational relationships
  - **19b. Organizations:** how do coalitions form?
  - **19c. Organizations:** how is power acquired by interorganizational coalitions?
  - **19d. Organizations:** what political tactics are employed by organizations in the interorganizational coalitions?