Pen and Paper Games

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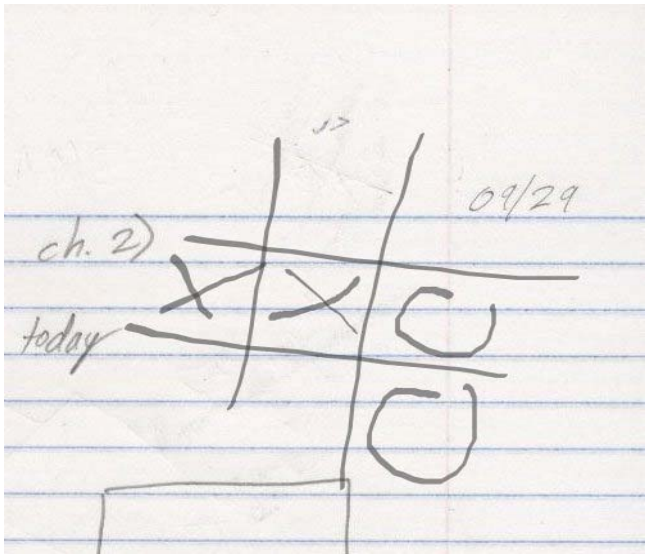
Overview

- Aims of the project
- Project structure
  - AI & Game logic
  - Recognition
  - Rendering

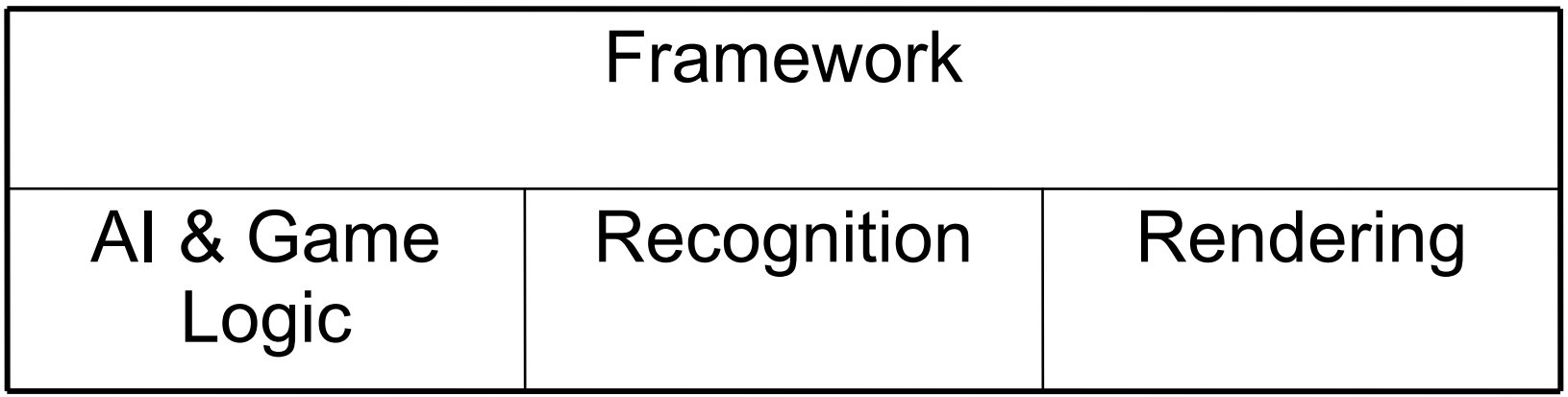
Aims



- Implement different Pen and Paper Games
- Have a working Tic Tac Toe in 4 weeks
- Extend and beautify

Structure

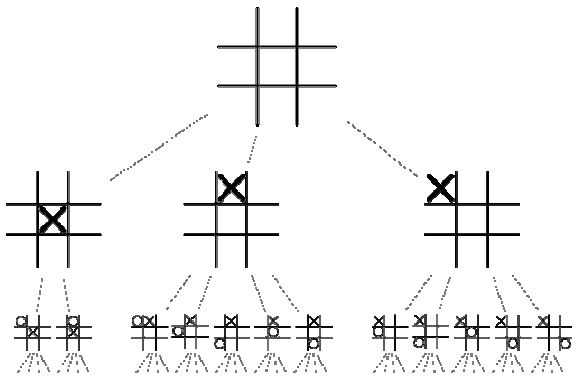
- Identify areas
- Split work



Framework

- Development environment
- Version control system
- Programming language (C++, Java)
  - Ongoing programming of different prototypes
  - Tests of graphics frameworks (OpenGL, QT, Java2D)

AI & Game Logic



- Depending on the game
- Tic Tac Toe is not too difficult (only 765 different positions)
- Further readings
  - W.R. Ball, H.S.M. Coxeter. Mathematical Recreations and Essays, 1987
  - S. Russell, P. Norvig. Artificial Intelligence: A Modern Approach, 2003

Recognition

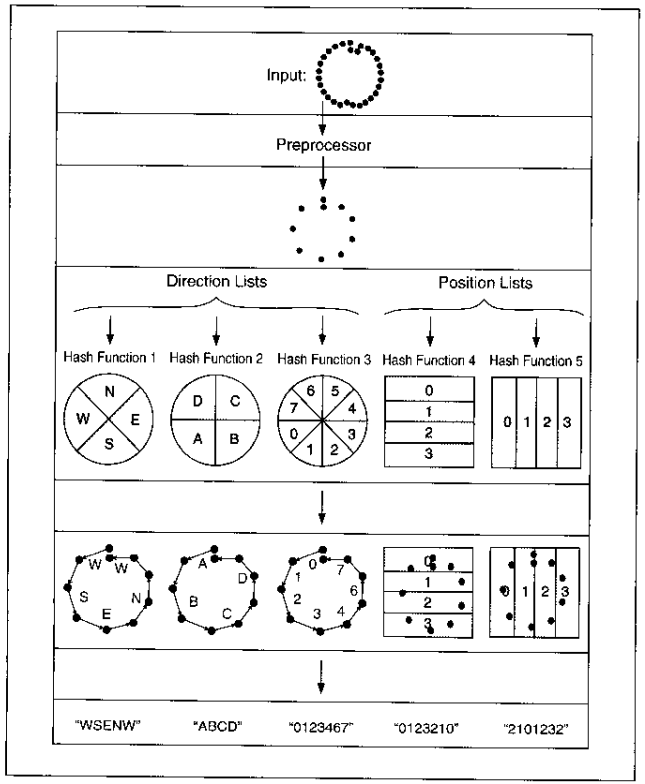


Figure 2: *The recognition process, as it handles the letter O*

- Simple algorithms for lines & circles
  - R. Avitzur. Your own handprinting recognition engine, 1992
- Doesn't scale well

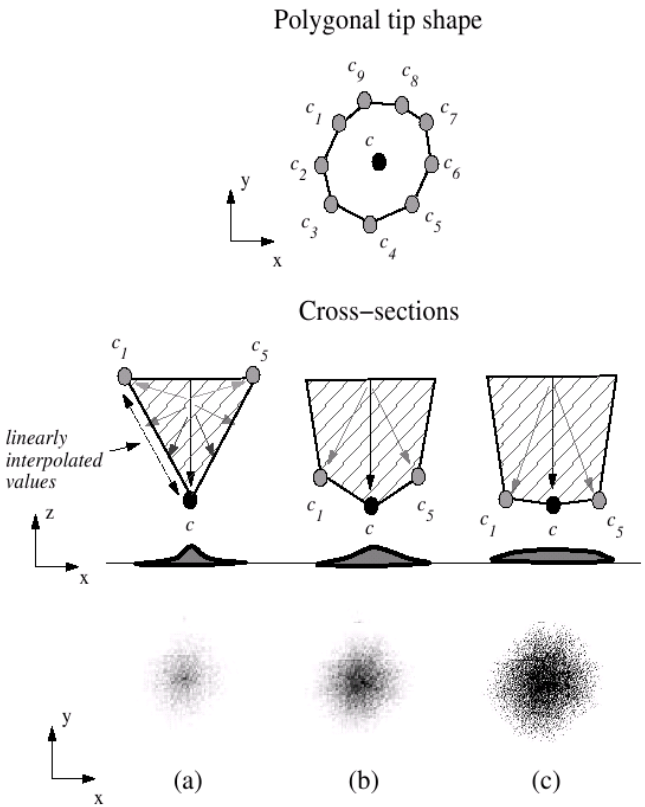
Advanced recognition

- Investigate further
  - J. Hu, S.G. Lim, M.K. Brown. Writer independent on-line handwriting recognition using an HMM approach, 2000
  - C. Bahlmann, B. Haasdonk, H. Burkhardt. On-line Handwriting Recognition using Support Vector Machines - A kernel approach, 2002
  - P.D. Gader, J. M. Keller, R. Krishnapuram, J. Chiang, M. A. Mohamed. Neural and Fuzzy Methods in Handwriting Recognition, 1997

Non-photorealistic rendering

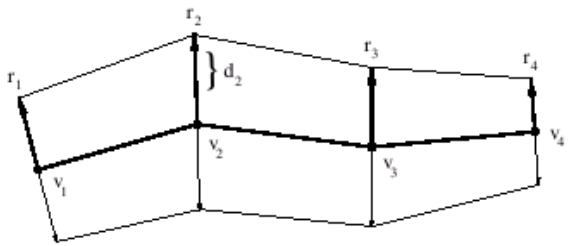
- References
  - J.D. Northrup, L. Markosian. Artistic silhouettes: A hybrid approach, 2000
  - C.J. Curtis, S.E. Anderson, J.E. Seims, K.W. Fleischen, D.H. Salesin. Computer-generated watercolor, 1997
  - M.C. Sousa. Computer-Generated Graphite Pencil Materials and Rendering, 1999
- Different styles
  - Pen & paper
  - Blackboard & chalk

Pencil Rendering



- M.C. Sousa. Computer-Generated Graphite Pencil Materials and Rendering, 1999
  - Very thorough and detailed
  - May be too slow
  - May not be cost efficient

Rendering Silhouettes



- J.D. Northrup, L. Markosian. Artistic silhouettes: A hybrid approach, 2000
  - May be fast
  - Versatile

Outlook

- Next time
  - Playable demo
  - Identified key points for learning
- Questions?