AI Topics we’ve studied

• History of AI
• Philosophy of AI
• Types of AI systems:
  – Thinking humanly
  – Acting humanly
  – Thinking rationally
  – Acting rationally
AI Topics we've studied (con't.)

• **PEAS** (Performance, Environment, Actuators, Sensors)

• **Properties of task environments**
  – Observable: fully, partially, not at all
  – Single vs multi-agent
  – Deterministic vs stochastic
  – Episodic vs sequential
  – Static vs dynamic
  – Discrete vs continuous
  – Known vs unknown
AI Topics we've studied (con't.)

- Uninformed search
  - BFS, DFS, Uniform-cost, Depth-limited, Iterative deepening
- Informed search:
  - Greedy best-first, A*, memory-bounded A*, iterative deepening A*
- Heuristic functions
- Search with non-deterministic actions (And/Or trees)
- Search with partial observations (Belief states)
- Online search
AI Topics we've studied (con't.)

- Adversarial search (games)
- Minimax trees
- Alpha-beta pruning
- Evaluation functions
- Stochastic games
AI Topics we've studied (con't.)

• Logical agents

• Propositional logic
  – Theorem-proving
  – Inference
  – Model-checking
  – Conjunctive Normal Form
  – Horn and definite clauses
  – Forward & backward chaining
AI Topics we've studied (con't.)

• First-order logic
  – Existential quantification
  – Universal quantification
  – Inference
  – Unification & lifting
  – Forward & backward chaining
  – Resolution
AI Topics we’ve studied (con’t.)

• Planning
  – Planning graphs
  – GraphPlan algorithm
  – Real-world issues:
    • Time, schedule, resources
    • Hierarchical planning
    • Planning/acting in nondeterministic domains
AI Topics we’ve studied (con’t.)

• Uncertainty
• Basic probability
• Joint probability distributions
• Prior and conditional probabilities
• Inference
• Bayes’ rule

"We’re looking for someone with your exact qualifications, but a mechanical version."
AI Topics we’ve studied (con’t.)

• Probabilistic reasoning over time
• States and observations
• Transitions and sensor models
• Filtering and prediction
• Smoothing
• Hidden Markov Models
AI Topics we’ve studied (con’t.)

- Natural language for communication
  - Language models
  - N-gram character and word models
  - Grammars
  - Probabilistic context-free grammars
  - Parsing
  - Lexicalized PCFGs
  - Complications

- Machine translation
- Speech recognition
Go forth and be (artificially) intelligent!