Review for Final, May 7, 12:20-2:10

April 30, 2004


2. Probability Theory.
   - Basic probability using counting.
   - Conditional probability, independent events.
   - The posterior probability and Bayes’ formula.
   - Random variable, expectation and variance.

3. Algorithms
   - ”Big Oh” estimate for the running time.
   - Basic algorithms.

4. Alignment.
   - Global alignment:
     - Linear gap penalty.
     - Affine gap penalty.
   - Local alignment problem.
   - Semi-global alignment algorithm.

5. Markov Chains.

6. Hidden Markov Models. Viterbi’s algorithm for finding the most probable path. Forward algorithm for finding the probability of a string.
7. **Mapping.**
   - STS-content mapping: Algorithm for the consecutive ones problem.
   - Radiation-hybrid mapping: Reduction to the TSP.
   - The tightest layout problem.

8. **Sequencing.**
   - Directed sequencing and shotgun sequencing.
   - Minimum tiling path and the shortest path.