CSE 427
Computational Biology

Course Wrap Up
Please complete online course evaluation by Sunday

https://uw.iasystem.org/survey/200291
What We Looked At

Methods
  Dynamic Programming, MLE/EM, Scoring, Some Biotech

Models
  WMMs, HMMs, CMs

Applications
  Seq Alignment, Motif Discovery/Modeling/Search, Gene Finding, RNA Folding/Discovery/Modeling/Search
What’s It Good For

Broad non-bio applicability of these ideas, e.g.:
- HMMs for speech/time series analysis
- Dynamic programming everywhere
- Does that email score above my spam threshold
- Does that Visa transaction look fraudulent
...

What We Bypassed

A Ton!:
Sequence assembly & mapping, variant calling, GWAS, 3d structure prediction (RNA + Protein), Expression analysis (e.g., RNAseq), Epigenetics, Single Cell methods, Metabolic modeling, Metagenomics, Ancestry, DNA Forensics, Gene Editing, …

Broadly, modern biotech allows deep dive into almost any biological system, nearly all of which demands careful computational analysis:
Disease analysis/“Precision Medicine”, stem cells & development, ecology, …
Exciting Times

“Biology is to 21st Century as Physics was to 20th”

Lots to do
Highly multidisciplinary
You’ll be hearing a lot more about it
I hope I’ve given you a taste of it
Thanks!

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