

CSE 427

Computational Biology

Course Wrap Up

Please complete online course
evaluation by Sunday

<https://uw.iasystem.org/survey/249017>

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 + genome),

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, the future of agriculture, ...

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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