

Mapping

Lecture 13
Sept 30, 2016

Learning to code can get you a \$70,000 job

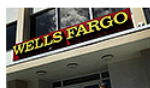
by Selena Larson @CNNTech

September 27, 2016: 5:36 PM ET

Recommend 2.2K



Social Surge - What's Trending



U.S.: Wells Fargo illegally repossessed 413 service members' cars

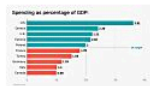


Child care now costs more than in-state college tuition



Mark Cuban: My players can join national anthem protest

Hot List



These NATO countries are not spending their fair share on defense



Starbucks is raising prices next week



Theranos founder banned for two years



Coding bootcamp: A college alternative

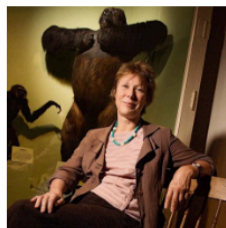
It's no secret that coding is a lucrative skill, but it turns out learning this skill can actually double your salary.

[Coding Dojo](#), a coding bootcamp founded in 2012, released a report Tuesday, which found that 56.5% of its graduates earned less than \$35,000 before enrolling. After completing the 14-week course, graduates make an average of \$72,221.

Janet Browne, Harvard University: "Rethinking the Darwinian Revolution"

Janet Browne is the world's leading expert on the life and work of Charles Darwin. She is the author of the acclaimed two-volume biography: *Charles Darwin: Voyaging* (1995) and *Charles Darwin: The Power of Place* (2002). Her work has been recognized by the award of the James Tait Black Prize, the Heinemann Prize, and the Pfizer Prize. She currently serves as President of the History of Science Society.

In this lecture, Professor Browne will reflect on recent scholarship that has reassessed the place of Darwin's ideas in nineteenth-century scientific and social thought.

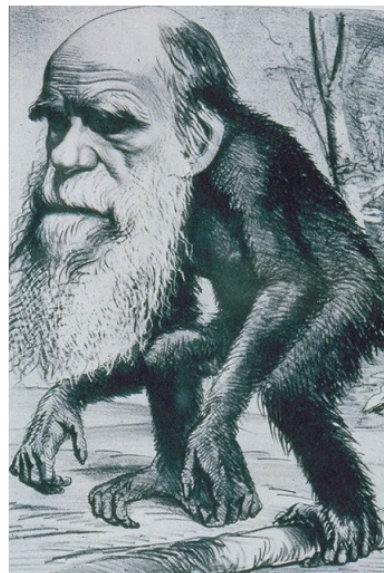


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Event Details

Event Details:

Monday, October 17, 2016 -
4:00pm to 5:30pm

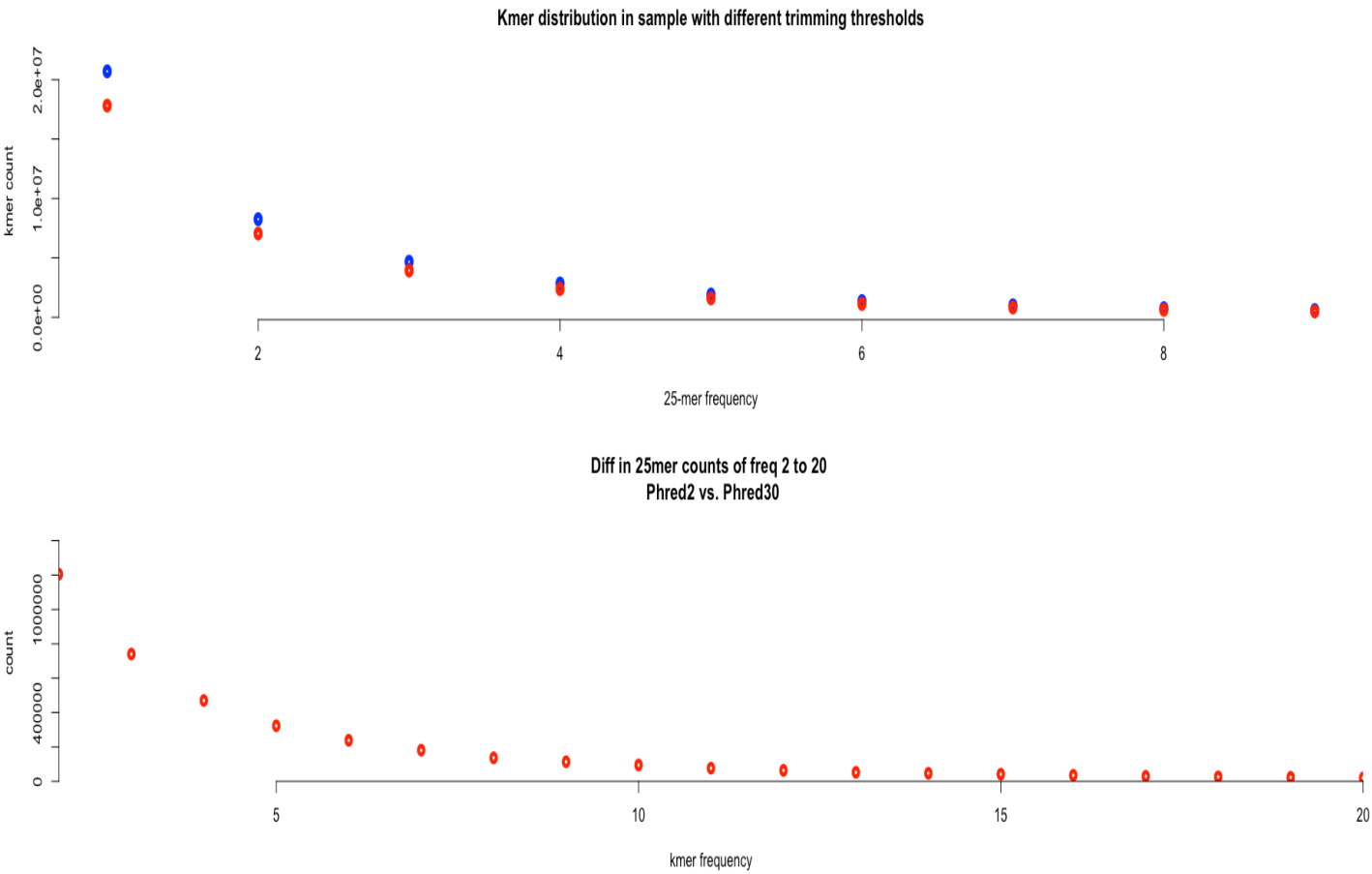
Price: Free and open to the public.

Location:

MUB 334

[Directions and Parking](#)

BRIEF INTRO TO KMERS



Read Error Correction

ERROR CORRECTION



ERROR CORRECTION

TATACAATTTGTTTTATGAAAACCTCTAAAAGCAAACATATTTACCAACAATCCTTGCATACGAAATAACCGATTCTATTTAAGCATTGCTCCTATTTTATACAATTTGTTTTATGAAAACCTCTAAAAGCAAACATATTTACCAACAATCCTTGCATACGAAATAACCGATTCTATTTAAGCATTG



ACTGTCATTCGGACTA
ACTGTCATTCGGACTA
ACTGTCATTCGGCCTA
ACTGTCATTCGGACTA
ACTGTCATTCGGACTA
ACTGTCATTCGGACTA
ACTGTCATTCGGACTA
ACTGACATTCGGACTA
ACTGTCATTCGGACTA
ACTGTCATTCGGACTA

The diagram illustrates a sequence alignment process. At the top, a long DNA sequence is shown. A blue box highlights a specific region of this sequence. Two blue lines extend from the corners of this box to the first and last sequences of a list below. This list contains ten DNA sequences, each 12 nucleotides long. The third sequence in the list, 'ACTGTCATTCGGCCTA', has a green 'C' at the 10th position, indicating a deviation from the expected sequence. The eighth sequence, 'ACTGACATTCGGACTA', has a red 'A' at the 7th position, indicating an error. The other sequences are identical to the first one, 'ACTGTCATTCGGACTA'.

Consensus= ACTGTCATTCGGACTA

ERROR CORRECTION

TATACAATTTGTTTTATGAAAACCTCTAAAAGCAAACATATTTACCAACAATCCTTGCATACGAAATAACCGATTCTATTTAAGCATTGCTCCTATTTTATACAATTTGTTTTATGAAAACCTCTAAAAGCAAACATATTTACCAACAATCCTTGCATACGAAATAACCGATTCTATTTAAGCATTG

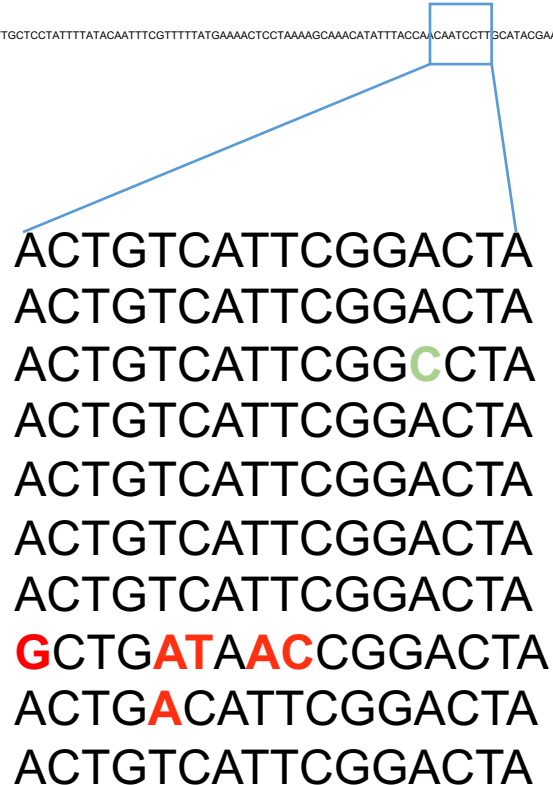


ACTGTCATTTCGGACTA
ACTGTCATTTCGGACTA
ACTGTCATTTCGGCCTA
ACTGTCATTTCGGACTA
ACTGTCATTTCGGACTA
ACTGTCATTTCGGACTA
ACTGTCATTTCGGACTA
ACTGACATTTCGGACTA
ACTGACATTTCGGACTA
ACTGTCATTTCGGACTA

Consensus= ACTG{A,T}CATTTCGGACTA

ERROR CORRECTION

TATACAATTTGTTTTATGAAAACCTCTAAAAGCAAACATATTTACCAACAATCCTTGCATACGAAATAACCGATTCTATTTAAGCATTGCTCCTATTTTATACAATTTGTTTTATGAAAACCTCTAAAAGCAAACATATTTACCAACAATCCTTGCATACGAAATAACCGATTCTATTTAAGCATTG



ACTGTCATTCGGACTA
ACTGTCATTCGGACTA
ACTGTCATTCGGCCTA
ACTGTCATTCGGACTA
ACTGTCATTCGGACTA
ACTGTCATTCGGACTA
ACTGTCATTCGGACTA
GCTGATACCGGACTA
ACTG**A**CATTCGGACTA
ACTGTCATTCGGACTA

The diagram illustrates a sequence alignment process. At the top, a long DNA sequence is shown. A small blue box highlights a specific region within this sequence. Two blue lines extend from the corners of this box, forming a trapezoidal shape that frames a list of ten DNA sequences below. These sequences represent individual reads or alignments. Most of these reads match the sequence 'ACTGTCATTCGGACTA'. The third read from the top of the list contains a green 'C' instead of a 'G' at the eighth position. The eighth read contains a red 'G' at the first position, followed by 'CTGATAC' in red, and then 'CGGACTA' in black. The ninth read contains a red 'A' at the fourth position, followed by 'CATTCGGACTA' in black. The tenth read matches 'ACTGTCATTCGGACTA'.

Consensus= ACTGTCATTCGGACTA

ERROR CORRECTION

Hamming Distance:

http://en.wikipedia.org/wiki/Hamming_distance

ERROR CORRECTION

3 different strategies

ERROR CORRECTION

Kmer-spectra based

ERROR CORRECTION

MSA based

ERROR CORRECTION

Evaluation of Correction