

### 3: Project Write-up

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April 26, 2023

#### **Abstract**

This project used techniques presented in the course to estimate parameters for a Hidden Markov Model of the provided data set. We prepared a substitution matrix, emission probability table, and state transition table from the data. The methods employed here produced good results which we are moderately confident in.

# 1 Algorithm Descriptions

## 2 Results

### 2.1 Emission Table

Amino Acid	State 0	State 1	State 2
a	3.91	7.94	1.59
c	3.84	2.75	6.86
d	1.87	1.72	4.18
e	3.91	2.62	5.62
f	6.60	4.96	5.55
g	3.73	1.85	4.86
h	3.65	1.77	3.63
i	2.91	2.13	5.01
k	3.29	2.40	4.96
l	3.48	5.26	4.22
m	4.67	4.28	4.79
n	5.58	2.35	5.41
p	5.84	3.71	5.75
q	5.44	2.18	5.38
r	2.82	1.75	5.18
s	5.77	4.17	4.90
t	5.96	11.10	5.75
v	11.35	14.54	5.38
w	7.43	11.86	6.43
y	7.97	10.66	4.56
From State	To State		
	State 0	State 1	State 2
0	96.1	3.89	0.00
1	0.00	92.01	7.99
2	1.54	0.00	98.5