

## CS490/590 Exercises 1 Description

This is your first set of Exercises: Fill in the rest of the OPT matrices corresponding to the 3 different types of alignment indicated in the attached excel file **Exercises1.xlsx**.

The two sequences to align are **TTACTGC** and **TGATGA**.

The gap penalty is -5 and the substitution matrix is given at the top right corner of the sheet in purple too.

I set up the matrices for your different alignment types **global**, **local**, **semiglobal** as they are indicated at each matrix.

In the partially filled portions, you will also notice letters 'd', 'h', or 'v' in the entries to indicate "the winning edge" into that entry. Diagonal (last even substitution) winners indicated by 'd', whereas the horizontal and vertical gaps are indicated by 'h' and 'v' respectively. Sometimes, ties are indicated by two letters, e.g. "dh" means both diagonal and horizontal edges tied.

You are to:

- Fill in the remainder of all three OPT matrices in the excel file **Exercises1.xlsx**.
- Backtrack from the appropriate position (e.g. for global alignment backtracking starts from the bottom rightmost entry and goes all the way back to the origin) to also extract the actual winning alignment itself.
  - Write out each optimal alignment for each alignment type in another word document file (e.g. MS Word, OpenOffice, or I'll accept compiled LaTeX source into PDF as well) entitled **Alignments1**.
- You are to submit both the completed excel file **Exercises1.xlsx** as well as the word document file **Alignments1** via a zipped folder entitled **Exercises1** (.zip, .tar, or .gz).