

## Exercise

## Computer Vision (CSCI 4220U)

Please hand in this paper to the instructor before the end of the lecture.

Name: \_\_\_\_\_

Student number: \_\_\_\_\_ Date: \_\_\_\_\_

**Q.** In simple terms, what does the Fourier transform decompose a complex signal into?

**Q.** If you have a signal made of two different sounds played at the same time, is the Fourier transform of the combined sound equal to the sum of the Fourier transforms of the individual sounds?

**Q.** If you have the Fourier transform of a signal, is it possible to get the original signal back?

**Q.** A “Dirac Delta” function is an infinitely short, sharp spike at time  $t = 0$ . What does its Fourier Transform look like?

**Optional Q.** Parseval’s Theorem relates the energy of a signal in the time domain to its energy in the frequency domain. What is that relationship?