Labs **Machine Learning Course** Fall 2018

## **EPFL**

School of Computer and Communication Sciences

Martin Jaggi & Rüdiger Urbanke

mlo.epfl.ch/page-157255-en-html/
epfmlcourse@gmail.com

## Problem Set 7, Nov 8, 2018 (Theory Questions Part)

## 3. Kernels:

- 1. Note that every term in the resulting polynomial is a product of kernels and that all these terms have positive coefficients. Hence the result follows by the two statements proved in class: namely that the positive sum of valid kernels is a valid kernel and that the product of valid kernels is a valid kernel.
- 2. We have  $\exp(x) = \sum_{i \geq 0} \frac{x^i}{i!}$ . We can hence apply the previous result concerning polynomials with positive coefficients and apply the limit.