

## **Kernel Density Machines**

**Paul SCHNEIDER**

**Universita' della Svizzera italiana, CH**

**Email: [paul.schneider@usi.ch](mailto:paul.schneider@usi.ch)**

In this talk, the speaker will introduce kernel density machines (KDM), a nonparametric estimator of a Radon--Nikodym derivative, based on reproducing kernel Hilbert spaces. KDM applies to general probability measures on countably generated measurable spaces under minimal assumptions. For computational efficiency, we incorporate a low-rank approximation with precisely controlled error that grants scalability to large-sample settings. We provide rigorous theoretical guarantees, including asymptotic consistency, a functional central limit theorem, and finite-sample error bounds, establishing a strong foundation for practical use. Empirical results based on simulated and real data demonstrate the efficacy and precision of KDM.