Deep learning is recently showing outstanding results for solving a wide variety of robotic tasks in the areas of perception, planning, localization, and control. Its excellent capabilities for learning representations from the complex data acquired in real environments make it extremely suitable for many kinds of autonomous robotic applications. In parallel, Unmanned Aerial Vehicles (UAVs) are currently being extensively applied for several types of civilian tasks in applications going from security, surveillance, and disaster rescue to parcel delivery or warehouse management.