Figure 1: **Schematic of a typical deep learning workflow.** A typical development process for deep learning applications can be viewed as consisting of three sequential stages (i) data related steps (ii) the learning component (iii) validation and analysis. Each one of these stages has several substeps and techniques associated with it, also depicted in the figure. In the survey we will overview most techniques in the learning component, as well as some techniques in the data and validation stages. Note that while a natural sequence is to first complete steps in the data stage, followed by learning and then validation, standard development will likely result in multiple different iterations where the techniques used or choices made in one stage are revisited based off of results of a later stage.