**Lecture: Machine Translation and Its Types: PBMT, SMT and NMT**

Translation technology would be an effective way for overcoming language barriers, in view of the multilingualism we encounter today in the Internet age.

There are three types of machine translation: PBMT (Phrase-Based Machine Translation), SMT (Statistical Machine Translation) and NMT (Neural Machine Translation), and with examples in multiple languages, including English, Chinese, Japanese, German and Russian, explained how these machine translation systems work.

Rule-based machine translation relies on large-scale bilingual dictionaries and man-programmed grammatical and transformation rules. SMT treats translation as a process of decoding, in which machine translation becomes a noisy channel that can be decoded by different channel models. Thus, statistics-based machine translation requires language models based on monolingual corpuses and translation models built on bilingual corpuses. As an emerging method of machine translation based on neutral networks, NMT also requires bilingual corpus training as SMT does. However, NMT presents better translation performance without phrase and rule tables, which are necessary in SMT, because all its calculations depend on unsigned true value.

The problems in machine translation, for example, inaccuracy in the translation of polysemy and acronyms, word omissions, low accuracy of non-English translations as well as the scarcity of corpus resources, despite the achievements in the field.