Sanskrit Machine Translation Systems: A comparative Analysis

* The main focus of Sanskrit in Machine Translation is to uncover the language suitability of its morphology and employ various MT techniques.
* There are four main approaches to MT
  + Direct Based Approach
    - Word by word translation with the help of a bilingual dictionary followed by syntactic rearrangement
    - No intermediate representation of codes
    - Only possible for bilingual translation
    - Requires little analysis of text and without parsing
  + Rule-Based Approach
    - Intermediate Representation may be produced like a parse tree
    - Rely on rules of morphology, syntax, lexical selection and transfer, semantic analysis, and generation
    - Two types – Transfer based and Interlingua
    - Transfer – SL to TL without intermediate Representation
    - Interlingua – Some intermediate code representation is required when translated from SL to TL via inter-language codes
  + Corpus-Based Approach
    - Requires sentence aligned parallel text for each language pair
    - It cant be used for language pairs for which corpora doesn’t exist
    - Of two types – Statistical MT and Example-Based MT
  + Knowledge-Based Approach
    - Requires an extensive knowledge base that includes both ontological and lexical knowledge.
    - Basic AI approaches include semantic parsing, lexical decomposition into semantic networks, and resolving ambiguities
* Many systems have been developed. Some of them are mentioned below
* English to Sanskrit Translator and Synthesizer (ETSTS)
* English Speech to Sanskrit Speech (ESSS)
* English to Sanskrit Translator (E-tranS)
* Sanskrit to English Translator
* English to Sanskrit Machine Translation System
* English to Sanskrit Statistical Machine Translation with Ubiquitous Application
* English to Sanskrit Machine Translation and Synthesizer System – A Rule-Based Approach
* Sanskrit to Hindi Machine Translation System
* Desika – A software package that can generate plain and accented written Sanskrit texts.
* Sanskrit WordNet – Based on EnglishNet and is more than a conventional Sanskrit dictionary
* Morphological analysis of nominal inflections of Sanskrit
* Dependency parser for the Sanskrit Language – uses deterministic finite automata (DFA) for morphological analysis and ‘Utsagra Apvaada’ for relation analysis
* Anusaaraka