

Short Title:	Machine Translation Paradigms APPROVED
Full Title:	Machine Translation Paradigms
Module Code:	MHLT H6021
ECTS credits:	10
NFQ Level:	9
Module Delivered in	1 programme(s)
Module Contributor:	Robert Smith
Module Description:	On completion of this module the learner will demonstrate a range of standard and specialized research or equivalent tools and techniques of inquiry with regard to machine translation paradigms. In doing so, learners will have the opportunity to implement and evaluate various open source machine translation solutions while gaining an understanding of the underlying theory.
Learning Outcomes:	
<i>On successful completion of this module the learner will be able to</i>	
<ol style="list-style-type: none"> 1. Demonstrate an awareness of state-of-the-art research and tools/techniques of inquiry with regard to machine translation paradigms. 2. Describe the challenges that face the translation industry and the various paradigms of machine translation that attempt to address those challenges. 3. Experiment with various open source machine translation implementations. 4. Discriminate between automated evaluation solutions for machine translation 	

Module Content & Assessment

Indicative Content
Overview of the field Corpus-based MT, rule-based MT, Hybrid MT systems. The Vauquois pyramid (Direct, transfer, interlingua).
Corpus-based MT EBMT, Phrased-based SMT, Word & Phrase based models, Language Models, Translation models, Decoding algorithms. IBM models (1-5). Open MT systems e.g. MOSES
Rule-based MT RBMT. Open MT systems: OpenMaTrEx and Apertium
MT implementation Implement at least two open MT systems across paradigms e.g. MOSES OpenMaTrEx Apertium
MT evaluation Evaluation metrics (BLEU, n-gram, METEOR).

Indicative Assessment Breakdown	%
Course Work Assessment %	100.00%

Course Work Assessment %				
<i>Assessment Type</i>	<i>Assessment Description</i>	<i>Outcome addressed</i>	<i>% of total</i>	<i>Assessment Date</i>
Written Report	Lit review paper	1	30.00	n/a
Project	Write a paper that will evaluate and compare implementations of at least two different MT paradigms. Implementations must be completed by students. This is a group project	2,3,4	70.00	n/a

No Final Exam Assessment %

Indicative Reassessment Requirement
Coursework Only <i>This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination.</i>
Reassessment Description Student will be required to complete a piece of work over the summer

ITB reserves the right to alter the nature and timings of assessment

Indicative Module Workload & Resources

Indicative Workload: Part Time

Frequency	Indicative Average Weekly Learner Workload
Every Week	2.00
Every Week	2.00
Every Week	2.67

Resources

Recommended Book Resources

Pushpak Bhattacharyya 2015, *Machine Translation*, Chapman and Hall

Supplementary Book Resources

Philipp Koehn 2010, *Statistical Machine Translation*, Cambridge University Press New York

Yorick Wilks 2009, *Machine Translation: Its Scope and Limits*

Somers, Harold, ed. 2003, *Computers and translation: a translator's guide*, Vol. 35. Ed., John Benjamins Publishing

Recommended Article/Paper Resources

Turcato, Davide, and Fred Popowich 2003, *What is Example-based machine translation?*, Recent advances in example-based machine translation, Springer Netherlands, 59-81

Supplementary Article/Paper Resources

Somers, Harold 1999, *Review article: Example-based machine translation*, Machine Translation 14.2, 113-1

Koehn, Philipp, et al. 2007, *Moses: Open source toolkit for statistical machine translation*, Proceedings of the 45th annual meeting of the ACL on interactive poster and demonstration sessions. Association for Computational Linguistics

Forcada, Mikel L., et al. 2011, *Apertium: a free/open-source platform for rule-based machine translation*, Machine translation 25.2, 127-1

Other Resources

Website: *The European Association for Machine Translation*

<http://www.eamt.org/>

Website: *OpenMatrex*

<http://www.openmatrex.org/>

Website: *Apertium*

<https://www.apertium.org>

Website: *MOSES*

<http://www.statmt.org/moses/>

Module Delivered in

Programme Code	Programme	Semester	Delivery
BN_KMHLT_R	Master of Science in Computing in Multimodal Human Language Technology	2	Elective