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INTRODUCTION

Born and raised as a trilingual, LO Chi-kiu speaks native Cantonese, fluent English and Mandarin. She is also a beginner in learning French. Her research interest is multilingual natural language processing with particular focuses on semantics in machine translation (MT), its quality evaluation and estimation.

She designs a unified semantic MT quality evaluation and estimation metric---YiSi. YiSi is the best or ties for the best performing metric in correlating with human judgments for 34 out of 36 tests across all output languages at both system and segment level in the Fourth Conference on Machine Translation (WMT19) metrics shared task. A YiSi-based semantic textual similarity system is also one of the leading submissions in the WMT19 parallel corpus filtering shared task. She is also the lead engineer and major author of the National Research Council of Canada (NRC) Kazakh to English news translation system in WMT19.

She received the Rising Star award from the Digital Technologies Research Center of the NRC in 2018.

EDUCATION

- May 2018 **PhD in Computer Science and Engineering**
The Hong Kong University of Science and Technology
Thesis: *MEANT: A highly accurate semantic frame based evaluation metric for improving machine translation utility*
- Aug 2009 **MPhil in Computer Science and Engineering**
The Hong Kong University of Science and Technology
Thesis: *Using Semantic Role Labels to Reorder Statistical Machine Translation Output*
- Jun 2004 **BEng in Computer Science (minor in Social Science)**
The Hong Kong University of Science and Technology

EMPLOYMENT

- May 2015 **Research Officer**
– Present Digital Technologies Research Centre, National Research Council Canada
- Aug 2008 **Research Assistant**
– Aug 2009 Human Language Technology Centre,
The Hong Kong University of Science and Technology
- Aug 2005 **Research Assistant**
– Aug 2006 Department of Mechanical Engineering,
The Hong Kong University of Science and Technology

AWARDS

- 2018 **Rising Star**
Digital Technologies Research Centre, National Research Council Canada

RESEARCH EXPERIENCES

- Feb 2016 **Quantitative Crisis Response (QCR)**
– Sep 2016 US Defense Advanced Research Projects Agency (DARPA)

Jan 2012	Broad Operational Language Translation (BOLT)
– Dec 2014	US Defense Advanced Research Projects Agency (DARPA)
Feb 2012	Bridges Across the Language Divide (EU-BRIDGE)
– Apr 2015	EU 7th Framework Programme (FP7)
Aug 2008	Global Autonomous Language Exploitation (GALE)
– Dec 2011	US Defense Advanced Research Projects Agency (DARPA)
Aug 2008	Learning Lexical Semantics for Statistical Machine Translation
– Jun 2011	Hong Kong Research Grants Council (HKRGC)
Aug 2005	Next Generation Online Multimedia Collaboration System
– Aug 2006	Hong Kong Innovation and Technology Fund (HKITF)

MAJOR ACHIEVEMENTS

2019	<p>Fourth conference on Machine Translation (WMT 2019)</p> <p><u>Machine Translation Quality Evaluation Metrics Shared Task</u></p> <p><i>1st place in two and tied for the 1st place in fourteen of the eighteen translation directions at the system level correlation with human</i></p> <p><i>1st place in nine and tied for the 1st place in nine of the eighteen translation directions at the sentence level correlation with human</i></p> <p><u>Machine Translation Quality Estimation Metrics Shared Task</u></p> <p><i>1st place in one, tied for the 1st place in five and the only participant in six of the eighteen translation directions at the system level correlation with human</i></p> <p><i>1st place in six, tied for the 1st place in two and the only participant in six of the eighteen translation directions at the sentence level correlation with human</i></p> <p><u>News Translation Shared Task</u></p> <p><i>Tied for the 3rd place in the constrained Kazakh-English human evaluation</i></p> <p><u>Parallel Corpus Filtering Shared Task</u></p> <p><i>3rd place in three, 4th place in two and 5th place in one of the eight evaluations</i></p>
2018	<p>Third conference on Machine Translation (WMT 2018)</p> <p><u>Machine Translation Quality Evaluation Metrics Shared Task</u></p> <p><i>1st place in three of the fourteen translation directions at the system level correlation with human</i></p> <p><i>Tied for the first place in ten of the fourteen translation directions at the sentence level correlation with human</i></p> <p><u>Parallel Corpus Filtering Shared Task</u></p> <p><i>Tied for the 2nd place in two, tied for the 6th place in one and the 8th place in one of the four evaluations</i></p> <p><i>6th place overall; one of the only four submissions that ranked top 10 in all evaluations</i></p>
2017	<p>Second conference on Machine Translation (WMT 2017)</p> <p><u>Machine Translation Quality Evaluation Metrics Shared Task</u></p> <p><i>1st place in two of the nineteen translation directions at the system level correlation with human</i></p> <p><i>1st place in five and tied for the 1st place in twelve of the nineteen translation directions at the sentence level correlation with human</i></p> <p><u>News Translation Shared Task</u></p> <p><i>Tied for the 1st place in constrained Russian-English human evaluation</i></p> <p><i>4th place in constrained Chinese-English human evaluation</i></p>
2016	<p>First conference on Machine Translation (WMT 2016)</p> <p><u>News Translation Shared Task</u></p> <p><i>2nd place in constrained Russian-English human evaluation</i></p>

2013 **Eighth Workshop on Machine Translation (WMT 2013)**
Machine Translation Quality Evaluation Metrics Shared Task
1st place in Czech-English at the system-level correlation with human

PUBLICATIONS

Citation indexes

Google Scholar since 2015 (Updated to 26-Jun-20) citations: 335 h-index: 11 i10-index: 13

Book Chapter

- 2020 Lane SCHWARTZ, Francis TYERS, Lori LEVIN, Christo KIROV, Patrick LITTELL, **Chi-kiu LO**, Emily PRUD'HOMMEAUX, Hyunji Hayley PARK, Kenneth STEIMEL, Rebecca KNOWLES, Jeffrey MICHER, Lonny STRUNK, Han LIU, Coleman HALEY, Katherine J ZHANG, Robbie JIMMERSON, Vasilisa ANDRIYANETS, Aldrian Obaja MUIS, Noaki OTANI, Jong Hyuk PARK, Zhisong ZHANG.
Final Report of the Sixth Frederick Jelinek Memorial Summer Workshop on Neural Polysynthetic Language Modelling
 In arXiv preprint arXiv:2005.05477
- 2010 Dekai WU, Pascale FUNG, Marine CARPUAT, **Chi-kiu LO**, Yongsheng YANG and Zhaojun WU.
Lexical Semantics for Statistical Machine Translation
 Handbook of Natural Language Processing and Machine Translation: DARPA Global Autonomous Language Exploitation. Springer.

Recent or Major Refereed Conference and Workshop Papers

- May 2020 Eric JOANIS, Rebecca KNOWLES, Roland KUHN, Samuel LARKIN, Patrick LITTELL, **Chi-kiu LO**, Darlene STEWART and Jeffrey MICHER.
The Nunavut Hansard Inuktitut-English Parallel Corpus 3.0 with Preliminary Machine Translation Results
 In the 12th Language Resources and Evaluation Conference (LREC 2020).
- Nov 2019 **Chi-kiu LO** and Michel SIMARD.
Fully unsupervised crosslingual semantic textual similarity metric based on BERT for identifying parallel data
 In the 23rd conference on Computational Natural Language Learning (CoNLL 2019). Hong Kong.
- Aug 2019 **Chi-kiu LO**.
YiSi – A unified semantic MT quality evaluation and estimation metric for languages with different levels of available resources
 In the Fourth conference on Machine Translation (WMT 2019). Florence, Italy.
- Aug 2019 Patrick LITTELL, **Chi-kiu LO**, Samuel LARKIN and Darlene STEWART.
Multi-Source Transformer for Kazakh-Russian-English Neural Machine Translation
 In the Fourth conference on Machine Translation (WMT 2019). Florence, Italy.
- Aug 2019 Gabriel Bernier-Colborne and **Chi-kiu LO**.
NRC Parallel Corpus Filtering System for WMT 2019
 In the Fourth conference on Machine Translation (WMT 2019). Florence, Italy.
- Nov 2018 **Chi-kiu LO**, Michel SIMARD, Darlene STEWART, Samuel LARKIN, Cyril GOUTTE and Patrick LITTELL.
Accurate semantic textual similarity for cleaning noisy parallel corpora using semantic machine translation evaluation metric: The NRC supervised submissions to the Parallel Corpus Filtering task
 In the Third conference on Machine Translation (WMT 2018). Brussels, Belgium.

- Nov 2018 Patrick LITTELL, Samuel LARKIN, Darlene STEWART, Michel SIMARD, Cyril GOUTTE and **Chi-kiu LO**.
Measuring sentence parallelism using Mahalanobis distances: The NRC unsupervised submissions to the WMT18 Parallel Corpus Filtering shared task
In the Third conference on Machine Translation (WMT 2018). Brussels, Belgium.
- Sep 2017 **Chi-kiu LO**, Boxing CHEN, Collin CHERRY, George FOSTER, Samuel LARKIN, Darlene STEWART and Roland KUHN.
NRC Machine Translation System for WMT 2017
In the Second conference on Machine Translation (WMT 2017). Copenhagen, Denmark.
- Sep 2017 **Chi-kiu LO**.
MEANT 2.0: Accurate semantic MT evaluation for any output language
In the Second conference on Machine Translation (WMT 2017). Copenhagen, Denmark.
- Aug 2016 **Chi-kiu LO**, Collin CHERRY, George FOSTER, Darlene STEWART, Rabib ISLAM, Anna KAZANTSEVA and Roland KUHN.
NRC Russian-English Machine Translation System for WMT 2016
In the First conference on Machine Translation (WMT 2016). Berlin, Germany.
- Sep 2015 **Chi-kiu LO**, Philipp C. DOWLING and Dekai WU.
Improving evaluation and optimization of MT system against MEANT
In the 10th Workshop on Statistical Machine Translation (WMT 2015). Lisbon, Portugal.
- Jun 2014 **Chi-kiu LO**, Meriem BELOUCIF, Markus SAERS and Dekai WU.
XMEANT: Better semantic MT evaluation without reference translation
In the 52nd Annual Meeting for the Association of Computational Linguistic (ACL 2014). Baltimore, Maryland, US.
- Sep 2013 **Chi-kiu LO** and Dekai WU.
Can informal genres be better translated by tuning on automatic semantic metrics?
In Machine Translation Summit XIV (MT Summit XIV). Nice, France.
- Aug 2013 **Chi-kiu LO**, Karteek ADDANKI, Markus SAERS and Dekai WU.
Improving machine translation by training against an automatic semantic frame based evaluation metric
In the 51st Annual Meeting for the Association of Computational Linguistic (ACL 2013). Sofia, Bulgaria.
- Jun 2012 **Chi-kiu LO**, Anand Karthik TUMULURU and Dekai WU.
Fully Automatic Semantic MT Evaluation
In the 7th Workshop on Statistical Machine Translation (WMT 2012). Montreal, Canada.
- Nov 2011 Simon SHI, Pascale FUNG, Emmanuel PROCHASSON, **Chi-kiu LO** and Dekai WU.
Mining Parallel Documents Using Low Bandwidth and High Precision CLIR from the Heterogeneous Web
In the 5th International Joint Conference on Natural Language Processing (IJCNLP 2011). Chiang Mai, Thailand.
- Jul 2011 **Chi-kiu LO** and Dekai WU.
SMT vs. AI redux: How semantic frames evaluate MT more accurately
In the 22nd International Joint Conference on Artificial Intelligence (IJCAI 2011). Barcelona, Spain.
- Jun 2011 **Chi-kiu LO** and Dekai WU.
MEANT: An inexpensive, high-accuracy, semi-automatic metric for evaluating translation utility based on semantic roles
In the 49th Annual Meeting of the Association for Computational Linguistics: Human Language Technologies (ACL-HLT 2011). Portland, Oregon, US.

INVITED TALKS

- May 2019 **Fifth Machine Translation Marathon in the Americas (MTMA 2019)**
YiSi, an open-source evaluation metric and its application
University of Maryland, College Park, MD
- Nov 2018 **Guest lecture in Computation in Linguistics**
Application of lexical and frame semantics in automatic textual similarity
University of Ottawa, Bachelor of Arts in Linguistics
- Oct 2018 **2018 Annual Ottawa-AI Workshop**
Machine Translation from Statistical to Neural
Ottawa-AI Alliance
- Oct 2011 **Guest lecture in Research Methodology**
Experimental Method
The Hong Kong Baptist University, Master of Arts in Language Studies

PROFESSIONAL SERVICES

- 2020 **Machine Translation Area Co-Chair**
The 58th Annual Meeting of the Association for Computational Linguistics (ACL 2020)
- 2019 **Diversity and Inclusion Committee Co-chair**
2019 Conference on Empirical Methods in Natural Language Processing and 9th
International Joint Conference on Natural Language Processing (EMNLP-IJCNLP 2019)
- 2019 **Organizing and Program Committee Co-chair**
Ottawa AI Alliance

TEACHING EXPERIENCES

- Sept 2011 **Instructor**
– Jan 2013 School of Continuing and Professional Studies,
The Chinese University of Hong Kong
Higher Diploma in Digital Animation and Creative Media
Mathematics in Creative Media (Fall 12, 11)
- Sept 2006 **Teaching Assistant**
– Jun 2012 Department of Computer Science and Engineering,
The Hong Kong University of Science and Technology
Research master in computer science
Natural Language Processing (Fall 08)
Taught master in information technology
Knowledge Management (Summer 09)
Senior undergraduates in computer science
Introduction to Natural Language Processing (Spring 12, 11, 10)
Introduction to Artificial Intelligence (Fall 10, 09)
Junior undergraduates in computer science
Principles of Programming Languages (Fall 11, 07)
Object-Oriented Programming (Spring 08, 07)
Junior undergraduates in non-computer science major
Computer and Programming Fundamentals I (Summer 07, Fall 06)
Exploring Multimedia and Internet Computing (Spring 08, 07, Fall 07, 06)

LANGUAGE SKILLS

- Spoken Cantonese (Native), English (Fluent), Mandarin (Fluent), French (Beginner)
- Written Chinese (Fluent), English (Fluent), French (Beginner)
- Computer C/C++, Python, Shell scripts, Perl, Scheme, R, Matlab, Prolog, Java (in order of fluency)