Subhro Roy

CONTACT INFORMATION

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POSITIONS

Senior Researcher, Microsoft Semantic Machines, Oct 2019 - present

Postdoctoral Associate, Massachusetts Institute of Technology, Aug 2017 - Sep 2019

EDUCATION

University of Illinois, Urbana Champaign
Ph.D., Computer Science, 2017
Thesis: Reasoning about Quantities in Natural Language
Advisor: Prof. Dan Roth

Indian Institute of Technology, Kharagpur
B.Tech, Computer Science and Engineering, 2012
GPA: 9.52/10.0

JOURNAL PUBLICATIONS

An Intelligent Architecture for Grounded Language Communication with Field Robots
T. Howard, N. Roy, J. Fink, J. Arkin, R. Paul, D. Park, **S. Roy**, D. Barber, R. Bendell, K. Schmeckpeper, J. Tian, J. Oh, M. Wigness, L. Quang, B. Rothrock, J. Nash, M. Walter, F. Jentsch, E. Stump
Field Robotics 2021

*Task-Oriented Dialogue as Dataflow Synthesis***
J. Andreas, J. Bufe, D. Burkett, C. Chen, J. Clausman, J. Crawford, K. Crim, J. DeLoach, L. Dorner, J. Eisner, H. Fang, A. Guo, D. Hall, K. Hayes, K. Hill, D. Ho, W. Iwaszuk, S. Jha, D. Klein, J. Krishnamurthy, T. Lanman, P. Liang, C. H. Lin, I. Lintsbakh, A. McGovern, A. Nisnevich, A. Pauls, D. Petters, B. Read, D. Roth, **S. Roy**, J. Rusak, B. Short, D. Slomin, B. Snyder, S. Striplin, Y. Su, Z. Tellman, S. Thomson, A. Vorobev, I. Witoszko, J. Wolfe, A. Wray, Y. Zhang and A. Zotov
TACL 2020

Multimodal estimation and communication of latent semantic knowledge for robust execution of robot instructions
Jacob Arkin, Daehyung Park, **Subhro Roy**, Matthew R Walter, Nicholas Roy, Thomas Howard, Rohan Paul
IJRR 2020

Mapping to Declarative Knowledge for Word Problem Solving
Subhro Roy and Dan Roth
TACL 2018

Reasoning about Quantities in Natural Language
Subhro Roy, Tim Vieira and Dan Roth
TACL 2015

CONFERENCE PUBLICATIONS

ZeroTOP: Zero-Shot Task-Oriented Semantic Parsing using Large Language Models
Dheeraj Mekala, Jason Wolfe, **Subhro Roy**
Arxiv

BenchCLAMP: A Benchmark for Evaluating Language Models on Semantic Parsing
Subhro Roy, Sam Thomson, Tongfei Chen, Richard Shin, Adam Pauls, Jason Eisner, Benjamin Van Durme
Arxiv

Addressing Resource and Privacy Constraints in Semantic Parsing Through Data Augmentation
Kevin Yang, Olivia Deng, Charles Chen, Richard Shin, **Subhro Roy**, Benjamin Van Durme
Findings of ACL 2022

Constrained Language Models Yield Few-Shot Semantic Parsers
Richard Shin, Christopher H. Lin, Sam Thomson, Charles Chen, **Subhro Roy**, Emmanouil Antonios Platanios, Adam Pauls, Dan Klein, Jason Eisner, Benjamin Van Durme
EMNLP 2021

Value-Agnostic Conversational Semantic Parsing
Emmanouil Antonios Platanios, Adam Pauls, **Subhro Roy**, Yuchen Zhang, Alex Kyte, Alan Guo, Sam Thomson, Jayant Krishnamurthy, Jason Wolfe, Jacob Andreas, Dan Klein
ACL 2021

Inferring Task Goals and Constraints using Bayesian Nonparametric Inverse Reinforcement Learning
Daehyung Park, Michael Noseworthy, Rohan Paul, **Subhro Roy**, and Nicholas Roy
CoRL 2019

Task-Conditioned Variational Autoencoders for Learning Movement Primitives
Michael Noseworthy, Rohan Paul, **Subhro Roy**, Daehyung Park and Nicholas Roy
CoRL 2019

Leveraging Past References for Robust Language Grounding
Subhro Roy*, Michael Noseworthy*, Rohan Paul, Daehyung Park and Nicholas Roy
CoNLL 2019

Grounding Robot Plans from Natural Language Instructions with Incomplete World Knowledge
Daniel Nyga*, **Subhro Roy***, Rohan Paul*, Daehyung Park, Mihai Pomarlan, Michael Beetz and Nicholas Roy
CoRL 2018

Real-Time Human-Robot Communication for Manipulation Tasks in Partially Observed Environments
Jacob Arkin, Rohan Paul, Daehyung Park, **Subhro Roy**, Nicholas Roy and Thomas M. Howard
ISER 2018

CogCompNLP: Your Swiss Army Knife for NLP
D. Khashabi, M. Sammons, B. Zhou, T. Redman, C. Christodoulopoulos, V. Srikumar, N. Rizzolo, L. Ratinov, G. Luo, Q. Do, C. Tsai, **S. Roy**, S. Mayhew, Z. Feng, J. Wieting, X Yu , Y. Song , S. Gupta S. Upadhyay , N. Arivazhagan , Q. Ning , S. Ling and D. Roth
LREC 2018

Unit Dependency Graph and its Application to Arithmetic Word Problem Solving
Subhro Roy and Dan Roth
AAAI 2017

Equation Parsing: Mapping Sentences to Grounded Equations
Subhro Roy, Shyam Upadhyay and Dan Roth
EMNLP 2016

*Approximating the Maximum Overlap of Polygons under Translation***
Sariel Har-Peled and **Subhro Roy**
Algorithmica 2016

MAWPS: A Math Word Problem Repository
Rik Koncel-Kedziorski*, **Subhro Roy***, Aida Amini, Nate Kushman and Hannaneh Hajishirzi
NAACL 2016

Solving General Arithmetic Word Problems
Subhro Roy and Dan Roth
EMNLP 2015

*Approximating the Maximum Overlap of Polygons under Translation***
Sariel Har-Peled and **Subhro Roy**
ESA 2014

Learning for Mining Outlier Subgraphs from Network Datasets
M. Gupta, A. Mallya, **S. Roy**, J. Cho, J. Han
SDM 2014

* denotes equal contribution
** denotes author names in alphabetical order

Packages Developed

Illinois Quantifier - detects and normalizes phrases containing quantifiable information in text, and normalizes them to a standard form.

Illinois Math Solver - automatically solves arithmetic word problems.

Funded Projects

Robotics Collaborative Technology Alliance (RCTA) or the US Army Research Labs (ARL), USA Human-Robot Interaction and Intelligence for Human-Robot Teams in army scenarios. Lead Postdoc representing MIT as an alliance member with several other academic and research institutions across the US.

Toyota Research Institute (TRI), USA Project titled Reading the Mind with Language and Vision. Application domain autonomous cars and home service robots. Lead Postdoc representing Robust Robotics Group. Collaborative project with the Center for Brains Minds and Machines at CSAIL, MIT.

Internships

Allen Institute for Artificial Intelligence, Seattle **May-Jul 2016**
Supervisor : Mark Hopkins
Open domain algebra word problem solver

Microsoft Research, Redmond, USA **May-Aug 2015**
Supervisor : Scott Yih, Ming-wei Chang, Chris Meek
Relation extraction for knowledge base completion.

Google, Mountain View, USA **May-Aug 2014**
Supervisor : J.D. Chen
Understanding reviews for apps.

ETH Zurich, Switzerland **May-July 2011**
Supervisor : Prof. Angelika Steger, Institute of Theoretical Computer Science
Neural structure of the brain, to learn relations.

Media

Software teaches computers to translate words to math
Illinois News Bureau
Link: `https://news.illinois.edu/view/6367/204435`

Honours and Awards

- **List of Teachers Ranked as Outstanding** by Their Students, UIUC, Spring 2017.
- **List of Teachers Ranked as Excellent** by Their Students, UIUC, Fall 2013.
- Felicitated by the **Governor of West Bengal** for securing 2nd position in the state in ICSE 2006, and 5th position in ISC 2008 Examination.
- Selected among top 30 students from the state of West Bengal in **Indian National Mathematical Olympiad, 2007**
- Selected among top 1% students from all over India in **Indian National Chemistry Olympiad, 2007**
- Secured 2nd position in **Yahoo HackU** contest. Developed an online **Railway Reservation system** for Indian Railways
- Recipient of the **Kishore Vaigyanik Protsahan Yojana (KVPY) Scholarship**, awarded by the Department of Science and Technology, Government of India, 2006
- Recipient of **O.P.Jindal Engineering and Management Scholarship (OPJEMS), 2010**
- Recipient of **Goralal Syngal Memorial Scholarship,** IIT Kharagpur

Teaching Experience

- **Teaching Assistant** for Machine Learning, Spring 2017
- **Teaching Assistant** for Undergraduate Algorithms, Fall 2013
- **Teaching Assistant** for Undergraduate Algorithms, Spring 2013
- **Teaching Assistant** for Ethical and Professional Issues in CS course, Fall 2012

Service

Reviewer : ARR (2021-present), ICML 2015, TACL 2015, AAAI 2016, IJCAI 2016, EMNLP 2017, AAAI 2018, ACL 2018, ICLR 2018, IJRR 2018, IROS 2018, CoRL 2018, EMNLP 2018, ICLR 2019, ACL 2019, CoNLL 2019, ICLR 2020, ACL 2020, EMNLP 2020, ICLR 2021, NAACL 2021, EACL 2021

SPC Member : AAAI 2019