

Invention ID: **D18-167**

Title: **Sequential Event Prediction with Noise-Contrastive Estimation for Marked Temporal Point Process**

Technology ID: **M18-237P**

Submitted By: **Ruocheng Guo**

Original Submitted Date: **4/26/2018**

Stage: **Approved**

Type: **Invention Disclosure Form**

Updated Date: **7/17/2018**

Last Submitted Date: **4/26/2018**

Status: **Available**

Details

Abstract/Brief summary of the invention

Give an overview of the invention's concept and chief objective(s) or purpose(s).

Software designed to predict what type of event will happen at what time in a sequence of events. A sequence of events can be usage record of a bike in a bike sharing program, retweets for a certain tweet in microblogging platform etc.

Introduction/Background of the invention

Give context to the invention. Describe the field(s) to which the invention pertains and the developments that led to the invention.

This system can take a sequence of events and predict the type and timing information for upcoming events in the future. A principle training framework for marked temporal point process based on noise-contrastive estimation is proposed in this system to achieve accurate predictions.

Detailed description of the invention

Give a thorough description of the invention as well as how it is made/executed and used. The description should be so detailed that a person skilled in the field would be able to make and use the invention as a result of reading it.

(See attached scientific paper)

Non-confidential summary of the invention

This should be one to two paragraphs in length and should not contain any proprietary information. The non-confidential summary should include an overview of the invention and its impact/commercial potential and may be shared with companies interest

This system can take a sequence of events and predict the type and timing information for upcoming events in the future. A principle training framework for marked temporal point process based on noise-contrastive estimation is proposed in this system to achieve accurate predictions.

Novel aspects of the invention

Specifically identify those properties of the invention (or the process by which it is made or used) that are novel and that distinguish it from existing technologies.

Uses noise-contrastive for marked temporal point process.

Advantages over current technology and impact

Please identify the invention's advantages over existing alternative products, processes or services.

Shown to be a more principled way for event sequence prediction.

ASU Information

Who is the primary contact for correspondence?

Ruocheng Guo

Lab(s)/Department(s) where invention was developed

DMML / CIDSE

Are all inventors ASU employees or students?

Y

If no, please provide details

Are any inventors undergraduate students?

N

Material or equipment provided by a third party?

N

If yes, please provide details

ASU Account Number (if applicable)

Conception Date

Conception of discovery

Conception is defined as: "the act of forming a general idea or notion"

9/1/2017

First disclosure to another

11/15/2017

First experiment demonstrating discovery

1/10/2018

Public Disclosure

Has invention been described in any publications?

Y

If yes please provide the name of all publications

Please provide the name of each publication, journal or website and the date of each publication.

Going to be published by the conference proceedings of IJCAI 2018.

Has a Manuscript been submitted?

Y

If yes, please provide date and to whom

Has a manuscript describing the invention been submitted for publication?

Submitted to IJCAI 2018.

Has the Invention appeared online?

Has a description of the invention appeared online (including conferences and abstracts)?

N

Has a grant application been submitted for review?

N

Has the Invention been disclosed publicly?

Was the invention disclosed publicly, such as in a poster session, presentation or lecture?

N

Has the Invention been offered for sale?

Was the invention or any derivative product sold, offered for sale, or used in public?

N

Are any of the above activities currently planned?

N

If yes, please provide details

Are any of the above disclosures of activities contemplated in the future? If yes, please provide details.

Related Publications

Related Publications?

Please list any papers, patents and other published material that you are currently aware of that either relate to your invention or describe similar technology. Please include links and/or submit copies of the publications when possible.

Export Controls

Is this invention regulated by ANY US export laws?

Please see description to your left

Not Sure

Commercial Potential

Commercial potential

Please describe the invention's commercial potential, in terms of potential products and services, and describe its competition/available alternatives.

Potential for use by bike sharing, social media and financial companies for event sequence prediction.

Inventors

Inventors

First Name	MI	Last Name	Email	Significance	Contribution	Role Type	Working For Company	Working For Department
Ruocheng		Guo	rguosni@asu.edu	1	34.00 %		_Arizona State University	School of Computing, Informatics and Decision Systems Engineering
Jundong		Li	jundongl@asu.edu	2	33.00 %		_Arizona State University	School of Computing, Informatics and Decision Systems Engineering
Huan		Liu	huan.liu@asu.edu	3	33.00 %		_Arizona State University	School of Computing, Informatics and Decision Systems Engineering

Funding

Was this invention Funded?

REQUIRED: Please select Yes or No from the drop-down list.

No

Funding

Grant / Contract No	Title	Granted Date	Funding Institution	Investigator
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Documents

Documents

File Name	Created By	Date Created
ijcai18.pdf	Ruocheng Guo	4/26/2018

Interests

Interests

Data Mining, Machine Learning, Social Media

Marketingtargets

MarketingTarget

Company	Contact	Email
Twitter		
Lyft		
Uber Technologies Inc		

Remarks

Remarks

By	Comment	Date Added
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Technology

Technology

Tech ID	Title	Manager	Status	Disclosure Date	Status Date
M18-237P	Sequential Event Prediction with Noise-Contrastive Estimation for Marked Temporal Point Process	Shen Yan	Available	4/26/2018	7/17/2018

Patents

Patents

App No.	Patent No.	Internal ID	Title	Country	Type	Status	Filed Date	Issued Date	Updated Date
62/697,880		M18-237P-PR1	Sequential Event Prediction with Noise-Contrastive Estimation for Marked Temporal Point Process	United States	Provisional	Perfected - PCT Filed	7/13/2018		5/10/2019
16/511,505		M18-237P-US1	Systems and Methods for Sequential Event Prediction with Noise-Contrastive Estimation for Marked Temporal Point Process	United States	Non-Provisional	Filed	7/15/2019		7/16/2019

Agreements

Agreements

Agreement ID	Title	Party	Type	Status	Effective	Updated
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I certify that the information contained in this Invention Disclosure Form is true, accurate and complete.

I acknowledge and agree that the Arizona Board of Regents (ABOR) on behalf of ASU owns the discovery and intellectual property disclosed herein pursuant to ABOR Intellectual Property Policy #6-908. I hereby assign all rights in the invention disclosed herein, including any patent applications related hereto, to ABOR on behalf of Arizona State University. I understand that Skysong Innovations (SI) is the intellectual property management organization for ASU.

If SI determines to seek patent or other appropriate protection for the technology described herein, I shall cooperate with SI in its efforts to do so and shall sign such documents as may be required for this purpose, including but not limited to an assignment of the discovery to ABOR in a form that may be recorded, a declaration as to inventorship, and power of attorney. I understand that ASU will adhere to the terms of ABOR policy #6-908, as amended from time to time, and, unless I agree otherwise, will distribute any proceeds from licensing or assigning the technology in accordance with such policy and ASU RSP #604.

If it is determined that I am an inventor, I acknowledge that SI will need my contact information to facilitate the prosecution and commercialization of this invention. I agree to promptly provide SI with any changes to my contact information. My failure to provide current contact information may affect SI's ability to prosecute and/or commercialize this invention and my ability to share in any commercialization revenue.

Digitally signed on 4/27/2018

Ruocheng Guo (34.00 %)

Date

Digitally signed on 4/27/2018

Jundong Li (33.00 %)

Date

Digitally signed on 4/27/2018

Huan Liu (33.00 %)

Date

Digitally signed on 4/27/2018

Witness Signature

Date

Digitally signed on 4/27/2018

Witness Signature

Date