

# Elaine Kearney

POSTDOCTORAL RESEARCH ASSOCIATE

Dept. of Speech, Language, and Hearing Sciences, Boston University

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*Speech scientist focused on the sensorimotor control of speech in individuals with and without motor speech disorders. I conduct both basic science and clinical research that leverages my expertise in behavioral, computational modeling, and neuroimaging methods. The long-term aim of my research program is to expand the evidence-based treatment options available to those with communication disorders.*

## Education

### PhD in Speech-Language Pathology

UNIVERSITY OF TORONTO

Toronto, Canada

January 2013–June 2018

- Thesis: The Speech Movement Disorder and its Rehabilitation in Parkinson's Disease Using Augmented Visual Feedback
- Committee: Drs. Yana Yunusova (Advisor), Luc de Nil, and Luc Tremblay

### BSc in Speech and Language Therapy

UNIVERSITY COLLEGE CORK

Cork, Ireland

September 2007–June 2011

- Thesis: Tongue-Plate Contact During Selected Vowels in Typical and Disordered Articulation
- Advisor: Dr. Alice Lee

## Research Employment

### Postdoctoral Research Associate

SPEECH NEUROSCIENCE LABORATORY, BOSTON UNIVERSITY

Boston, MA, USA

January 2018–Present

- Projects: Neural Modeling and Imaging of Speech, Voice and Speech Sensorimotor Control in Parkinson's Disease
- Advisors: Drs. Frank H. Guenther and Jason A. Tourville

### Research Assistant

VOCAL TRACT VISUALIZATION LABORATORY, TORONTO REHABILITATION INSTITUTE

Toronto, Canada

January 2013–December 2017

- Project: Visual Feedback Systems in Speech Rehabilitation
- Advisor: Dr. Yana Yunusova

### Research Assistant

SPEECH AND STUTTERING INSTITUTE

Toronto, Canada

June 2012–December 2012

- Project: Motor Speech Treatment Protocol for Developmental Motor Speech Disorders
- Advisor: Dr. Aravind Namasivayam

## Research Awards and Honors

### Undergraduate College Scholarship

UNIVERSITY COLLEGE CORK

Cork, Ireland

May 2010

- 1000 EUR

### Speech-Language Pathology Travel Award

UNIVERSITY OF TORONTO

Toronto, Canada

March 2014

- 425 CAD

### School of Graduate Studies Conference Grant

UNIVERSITY OF TORONTO

Toronto, Canada

November 2014

- 850 CAD

### Graduate Scholarship Prize

TORONTO REHABILITATION INSTITUTE - UNIVERSITY HEALTH NETWORK

Toronto, Canada

November 2015

- 1000 CAD

### Office of Research Trainees Conference Travel Award

UNIVERSITY HEALTH NETWORK

Toronto, Canada

March 2016

- 500 CAD

### Rehabilitation Sciences Institute Presentation Award

UNIVERSITY OF TORONTO

- 300 CAD

Toronto, Canada

May 2017

### Rehabilitation Sciences Institute Peer Mentorship Award

UNIVERSITY OF TORONTO

- 100 CAD

Toronto, Canada

May 2017

### Polatajko-Howell Student Conference Presentation Fund

UNIVERSITY OF TORONTO

- 300 CAD

Toronto, Canada

June 2017

### ASHA's Research Mentoring: Pathways Program

AMERICAN SPEECH-LANGUAGE-HEARING ASSOCIATION

- Travel, accommodation and food costs for duration of workshop

USA

June 2019

### Professional Development and Postdoctoral Affairs Travel Award

BOSTON UNIVERSITY

- 500 USD

Boston, MA, USA

August 2019

## Professional Affiliations and Service

### Professional Associations

2018–Present

- Non-Clinical Member, American Speech-Language-Hearing Association (ASHA)
- Postdoctoral Member, Society for the Neurobiology of Language (SNL)

### Manuscript Reviews

2018–Present

- American Journal of Speech-Language Pathology, Reviews: 7
- Journal of Speech, Language, and Hearing Research, Reviews: 6
- Neurorehabilitation and Neural Repair, Reviews: 2
- Journal of Communication Disorders, Reviews: 1
- Journal of Voice, Reviews: 1
- Clinical Linguistics & Phonetics, Reviews: 1

### Conference Reviews

2019–2020

- International Clinical Phonetics and Linguistics Association Symposium 2020/21
- Boston Speech Motor Control Symposium 2019

### Grant Reviews

2019–2020

- LVST Small Student Grant

### Conference Organization

Boston, MA, USA

April 2018–June 2019

- Organizing Committee, Boston Speech Motor Control Symposium 2019

## Publications

Available for download at <https://www.elaine-kearney.com/publication/>

### PEER-REVIEWED

#### Contributions of auditory and somatosensory feedback to vocal motor control

*Journal of Speech, Language, and  
Hearing Research*

SMITH, D. J., STEPP, C. E., GUENTHER, F. H., & KEARNEY, E.

2020

#### A simple 3-parameter model for examining adaptation in speech and voice production

*Frontiers in Psychology*

KEARNEY, E., NIETO-CASTANON, A., WEERATHUNGE, H. R., FALSINI, R., DALIRI, A., ABUR, D., BALLARD, K. J., CHANG, S-E.,

2020

CHAO, S-C., HELLER MURRAY, E. S., SCOTT, T. L., & GUENTHER, F. H.

## Articulating: The neural mechanisms of speech production

KEARNEY, E., & GUENTHER, F. H.

*Language, Cognition, and Neuroscience*

2019

## Towards movement-based outcome measures for apraxia of speech: A systematic review

BAILEY, K., KEARNEY, E., ROBERTS, E., & YUNUSOVA, Y.

*Aphasiology*

2019

## Electromagnetic articulography (EMA) for real-time feedback application: Computational techniques

HAWORTH, B., KEARNEY, E., FALOUTSOS, P., BALJKO, M., & YUNUSOVA, Y.

*Computer Methods in Biomechanics and Biomedical Engineering: Imaging and Visualization*

2019

## Augmented visual feedback-aided interventions in motor rehabilitation in Parkinson's disease: A systematic review

KEARNEY, E., SHELLIKERI, S., MARTINO, R., & YUNUSOVA, Y.

*Disability and Rehabilitation*

2019

## Treating speech-movement hypokinesia in Parkinson's disease: Does movement size matter and to what extent?

KEARNEY, E., HAWORTH, M. B., SCHOLL, J., FALOUTSOS, P., BALJKO, M., & YUNUSOVA, Y.

*Journal of Speech, Language, and Hearing Research*

2018

## Sentence-level movements in Parkinson's disease: Loud, clear, and slow speech

KEARNEY, E., GILES, R., HAWORTH, M. B., FALOUTSOS, P., BALJKO, M., & YUNUSOVA, Y.

*Journal of Speech, Language, and Hearing Research*

2017

## Game-based augmented visual feedback for enlarging speech movements in Parkinson's disease

YUNUSOVA, Y., KEARNEY, E., KULKARNI, M., HAWORTH, M. B., BALJKO, M., & FALOUTSOS, P.

*Journal of Speech, Language, and Hearing Research*

2017

## Outcome measures in developmental speech sound disorders with a motor basis

KEARNEY, E., GRANATA, F., YUNUSOVA, Y., VAN LIESHOUT, P., HAYDEN, D., & NAMASIVAYAM, A.

*Current Developmental Disorders*

2015

## Motor Speech Treatment Protocol for developmental motor speech disorders

NAMASIVAYAM, A., PUKONEN, M., HARD, J., JAHNKE, R., KEARNEY, E., KROLL, R., & VAN LIESHOUT, P.

*Developmental Neurorehabilitation*

2015

## Tongue-palate contact during selected vowels in children with speech sound disorders

LEE, A., GIBBON, F. E., KEARNEY, E., & MURPHY, D.

*International Journal of Speech-Language Pathology*

2014

## PROCEEDINGS

## Electromagnetic articulography in the development of "serious games" for speech rehabilitation

HAWORTH, M. B., KEARNEY, E., BALJKO, M., FALOUTSOS, P., & YUNUSOVA, Y.

*Proceedings of the 2nd International Workshop on Biomechanical and Parametric Modeling of Human Anatomy*

2014

## Presentations

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### INTERNATIONAL

#### Invited

## The speech movement disorder in Parkinson's disease and its rehabilitation using augmented visual feedback

KEARNEY, E., HAWORTH, M. B., FALOUTSOS, P., BALJKO, M., & YUNUSOVA, Y.

*Boston, MA, USA*

2017

- Boston Speech Motor Control Working Group

## Development of augmented feedback targets for speech rehabilitation in Parkinson's disease

KEARNEY, E., HAWORTH, M. B., FALOUTSOS, P., BALJKO, M., & YUNUSOVA, Y.

*Cork, Ireland*

2015

- University College Cork

#### Conference

## Contributions of auditory and somatosensory feedback to vocal motor control

KEARNEY, E., SMITH, D. J., STEPP, C. E., & GUENTHER, F. H.

- 20th Biennial Conference on Motor Speech

Santa Barbara, CA, USA

2020

## SimpleDIVA: A 3-parameter model for examining adaptation in speech and voice production

KEARNEY, E., NIETO-CASTANON, A., DALIRI, A., & GUENTHER, F. H.

- 11th Annual Meeting of the Society for Neurobiology of Language

Helsinki, Finland

2019

## Game-based speech therapy using visual feedback in Parkinson's disease

KEARNEY, E., HAWORTH, B., SCHOLL, J., GILES, R., FALOUTSOS, P., BALJKO, M., & YUNUSOVA, Y.

- 7th International Conference on Speech Motor Control

Groningen, Netherlands

2017

## Speech movements and intelligibility in Parkinson's disease

KEARNEY, E., SHELLIKERI, S., GILES, R., HAWORTH, M. B., FALOUTSOS, P., BALJKO, M., & YUNUSOVA, Y.

- 18th Biennial Conference on Motor Speech

Newport Beach, CA, USA

2016

## Movement-based speech therapy for dysarthria in Parkinson's disease and apraxia of speech

YUNUSOVA, Y., KEARNEY, E., HAWORTH, M. B., FALOUTSOS, P., & BALJKO, M.

- 18th Biennial Conference on Motor Speech

Newport Beach, CA, USA

2016

## Measuring participation in developmental speech sound disorders with a motor basis

KEARNEY, E., GRANATA, F., YUNUSOVA, Y., VAN LIESHOUT, P., HAYDEN, D., & NAMASIVAYAM, A.

- American Speech-Language-Hearing Association Convention

Denver, CO, USA

2015

## Instrumental outcome measures in developmental speech sound disorders with a motor basis

GRANATA, F., KEARNEY, E., YUNUSOVA, Y., VAN LIESHOUT, P., HAYDEN, D., & NAMASIVAYAM, A.

- International Association of Orofacial Myology Convention

Orlando, FL, USA

2015

## Artifact removal techniques for 3D electromagnetic articulography

MOGHADDAM, A., HAWORTH, B., KEARNEY, E., FALOUTSOS, P., BALJKO, M., & YUNUSOVA, Y.

- 3rd International Workshop on Biomechanical and Parametric Modeling of Human Anatomy

Montreal, Canada

2015

## Articulatory working space in older adults across speaking conditions

KEARNEY, E., HAWORTH, M. B., FALOUTSOS, P., BALJKO, M., & YUNUSOVA, Y.

- American Speech-Language-Hearing Association Convention

Orlando, FL, USA

2014

## Electromagnetic articulography in the development of serious games for speech rehabilitation

HAWORTH, M. B., KEARNEY, E., BALJKO, M., FALOUTSOS, P., YUNUSOVA, Y.

- 2nd International Workshop on Biomechanical and Parametric Modeling of Human Anatomy

Vancouver, Canada

2014

## Articulatory working space as a kinematic target in augmented feedback applications

KEARNEY, E., HAWORTH, M. B., FALOUTSOS, P., BALJKO, M., & YUNUSOVA, Y.

- 17th Biennial Conference on Motor Speech

Sarasota, FL, USA

2014

## Rehabilitative speech computer game calibration using empirical characterizations of articulatory working space

YUNUSOVA, Y., FALOUTSOS, P., & BALJKO, M.

- 17th Biennial Conference on Motor Speech

Sarasota, FL, USA

2014

## Tongue-palate contact during selected vowels in children with speech sound disorder of unknown origin

LEE, A., KEARNEY, E., & GIBBON, F. E.

- International Clinical Phonetics and Linguistics Association Conference

Cork, Ireland

2012

## NATIONAL

### Invited

## The speech movement disorder and its rehabilitation in Parkinson's disease using augmented visual feedback

KEARNEY, E., HAWORTH, M. B., FALOUTSOS, P., BALJKO, M., & YUNUSOVA, Y.

- Universite de Montreal

Montreal, Canada

2017

## Conference

## Investigating the Neural Mechanisms of Speech Rate, Clarity, and Emphasis. Boston Speech Motor Control Symposium

Boston, MA, USA

KEARNEY, E., TOURVILLE, J.A., NIETO-CASTANON, A., & GUENTHER, F.

2019

- Boston Speech Motor Control Symposium

## A 3-parameter model for fitting and interpreting speech sensorimotor adaptation data

San Francisco, CA, USA

GUENTHER, F., KEARNEY, E., DALIRI, A., & NIETO-CASTANON, A.

2019

- Neural Bases of Speech Production

## Speech movements in apraxia of speech

Calgary, Canada

ROBERTS, E., KEARNEY, E., BAILEY, K., GRAHAM, N., ROCHON, E., & YUNUSOVA, Y.

2017

- Canadian Stroke Congress

## Game-based augmented visual feedback treatment for apraxia of speech after stroke

Calgary, Canada

YUNUSOVA, Y., KEARNEY, E., SCHOLL, J., JANIK-JONES, C., HAWORTH, B., ROBERTS, E., FALOUTSOS, P., & BALJKO, M.

2017

- Canadian Stroke Congress

## Tongue-palate contact during selected vowels in children with speech sound disorder of unknown origin

Dublin, Ireland

LEE, A., KEARNEY, E., & GIBBON, F. E.

2011

- Irish Association of Speech and Language Therapists Biennial Conference

## Software

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### SimpleDIVA

<https://bit.ly/2XY1n7f>

KEARNEY, E., NIETO-CASTANON, A., FALSINI, R., KEARNEY, E. & WEERATHUNGE, H.R.

2019

- An application that allows users to apply a simplified version of the DIVA model to data collected from auditory sensorimotor adaptation experiments

## Teaching

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### CERTIFICATE

#### Teaching in Higher Education

Toronto, Canada

UNIVERSITY OF TORONTO

April 2016

### EXPERIENCE

#### Course Instructor

Boston, MA, USA

BOSTON UNIVERSITY

September 2019-December 2019

- Research Methods in Speech-Language Pathology and Audiology, Clinical MSc.

#### Guest Lecturer

Boston, MA, USA

BOSTON UNIVERSITY

November 2019

- SimpleDIVA Software Tutorial, Neural Control of Speech, MSc./Ph.D.

#### Guest Lecturer

Boston, MA, USA

MASSACHUSETTS GENERAL HOSPITAL - INSTITUTE OF HEALTH PROFESSIONS

July 2019

- Advancements in Treatment for Dysarthria, Neuromotor Speech Disorders

#### Course Instructor

Toronto, Canada

UNIVERSITY OF TORONTO

September 2017-December 2017

- Principles of Clinical Practice, Clinical MSc.

#### Teaching Assistant, Guest Lecturer

Toronto, Canada

UNIVERSITY OF TORONTO

September 2013-June 2017

- Motor Speech Disorders, Clinical MSc.
- Articulation and Related Disorders, Clinical MSc.
- Research in Speech-Language Pathology, MSc.
- Linguistics in the Workforce: Clinical Practice and Research, BSc.
- Augmentative and Alternative Communication, Clinical MSc.
- Applied Audiology, Clinical MSc.
- Neurocognitive Communication, Clinical MSc.
- Advanced Principles of Clinical Practice, Clinical MSc.
- Adult Language Disorders, BSc.

# Technical Skills

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## Speech Acoustics

PRAAT, AUDACITY, TF32

## Speech Kinematics

ELECTROMAGNETIC ARTICULOGRAPHY, SPEECH MOVEMENT ANALYSIS FOR SPEECH AND HEARING RESEARCH (SMASH)

## Auditory Feedback Perturbation

AUDAPTER

## Signal Processing and Analysis

MATLAB

## Neuroimaging Analysis

STATISTICAL PARAMETRIC MAPPING (SPM), FREESURFER, FUNCTIONAL CONNECTIVITY TOOLBOX (CONN)

## Statistical Analysis

R, MATLAB

## Version Control

GITHUB

## Design Software

AFFINITY DESIGNER, ADOBE INDESIGN

## Bibliographic Management

ENDNOTE, ZOTERO