Let’s Have Another Gan Ainm
An experimental album of Irish traditional music
and computer-generated tunes

https://soundcloud.com/oconaillfamilyandfriends/tracks

Bob L. Sturm† and Oded Ben-Tal⋆

†Department of Speech, Music and Hearing, KTH Royal Institute of Technology,
bobs@kth.se
⋆Department of Performing Arts, Kingston University, UK, o.ben-tal@kingston.ac.uk

September 17, 2018

Track listing:
1. Gan Ainm, Gan Ainm, Gan Ainm
2. The Drunken Landlady, Gan Ainm, Gan Ainm
3. Gan Ainm, Gan Ainm, Gan Ainm
4. Battle Of Aughrim, Gan Ainm, Lord Mayo
5. Gan Ainm, Gan Ainm, Tom Billys
6. Girls Of Banbridge, Gallowglass, Gan Ainm
7. The Blackbird, Gan Ainm, Mrs Galvin’s
8. Gan Ainm
9. Gan Ainm, Bunch of Green Rushes, Gan Ainm
10. Gan Ainm, Gan Ainm, Anthony Frowley’s
11. Gan Ainm, Toss the Feathers (II), Gan Ainm

This work is licensed under a Creative Commons Attribution 4.0 International License

Abstract
This technical report details the creation and public release of an album of folk music, most which comes from material generated by computer models trained on transcriptions of traditional music of Ireland and the UK. For each computer-generated tune appearing on the album, we provide below the original version and the alterations made.
Introduction

This music album comes from a research collaboration between engineers and composers and musicians looking at how computers — specifically, statistical machine learning methods — can augment music creation. It is an experimental album in a literal sense: of its 31 tunes, 20 are created from material generated by a machine-learning model trained on tens-of-thousands of transcriptions of traditional music from Ireland and the UK. We created and released the album to gauge concrete impacts of our application of machine learning with practitioners in the originating problem domain. This also gave us the opportunity to explore with experts what our models learned (e.g., how easy is it to curate good tunes in the generated material, and how generated materials can be improved); but also what they have not learned and ways in which they fail.

We hired London-based musician Daren Banarse to create sets from material curated from 14 volumes (40,000 tunes) generated by our computer models. We gave him freedom to make any changes to the material he curated. In some cases, he made only a few changes; in others, he made more substantial changes. These are detailed in the pages that follow. Banarse assembled a group of professional musicians, whom we hired to record the album at the Visconti Studio at Kingston University, UK in January 2018.

After the album was mastered, we printed several dozen “white-label” CDs to send to reviewers. We wanted the album reviewed as if it were a standard album of folk music, and to avoid the bias that can result when a person believes a creative product has non-human origins. With ethics approval granted from the Faculty Research Ethics committee of Kingston University, UK, we created the following story about the album, and printed it on stickers applied to the while-label CDs:

During the Summer of 2017, three generations of the Ó Conaill family gathered at the family home in Roscommon to celebrate the life and legacy of Dónal Ó Conaill. The late father and grandfather to the Ó Conaill family, Dónal was quietly dedicated to the tradition, and known for collecting local tunes without names, which he passed on to his family. His daughters, Caitlín and Úna, are joined by their children and family friends to make a recording of the best of these tunes, along with some of Dónal’s personal favourites.

contact: caitlinoconaill@gmail.com

On March 19 2018, we release the album on soundcloud with the same information. We sent these materials to a variety of reviewers in Europe and the USA.

On September 7, 2018, we revealed the true story to all those who had reviewed the album, or commented on the album via Caitlín’s email. Our message to these reviewers was the following:

Thank you for listening to “Let’s have another Gan Amín” (https://soundcloud.com/oconaillfamilyandfriends). We are especially pleased by all the praise expressed so far. That is a testament to the fine musicians appearing on this album, and the hard work they put into bringing it about. After all is said and done, we are all very proud of it.


2This album is a deliverable of the project Sturm and Ben-Tal, “Engaging three user communities with applications and outcomes of computational music creativity” (funded by UK Arts and Humanities Research Council, grant no. AH/R004706/1), https://gtr.ukri.org/projects?ref=AH%2FR004706%2F1. Our source code is here: https://github.com/IraKorshunova/folk-rnn. The training transcriptions come from https://thesession.org/.


5The musicians on the album are: Tad Sargent (bouzouki), Bryony Lemon (accordion), Grace Lemon (pipes), Daren Banarse (melodica), Eimear McGeown (flute/whistle), Rob Webb (fiddle).

6For an example of our past experience with such bias, see the following: https://highnoongmt.wordpress.com/2017/05/29/an-accidental-listening-experiment/.

7Approved document here: https://tinyurl.com/yc7epq68u.

8Grants from the Faculty Research Ethics committee of Kingston University, UK.


10This also gave us the opportunity to explore with experts what our models learned (e.g., how easy is it to curate good tunes in the generated material, and how generated materials can be improved); but also what they have not learned and ways in which they fail.

11Grants from the Faculty Research Ethics committee of Kingston University, UK.
AN EXPERIMENTAL ALBUM

In fact, “Let’s have another Gan Ainm” is an experimental album in a very literal sense: of its 31 tunes, more than half are generated by a computer that has analysed thousands of transcriptions of folk dance tunes from Ireland and the UK. This album is a culmination of a research collaboration between engineers, composers and musicians looking at how computers can aid in music creation. Working together, we arrived to the idea of this album to address several questions:

- How effective are these computer-generated tunes within the kind of folk music this computer is trained on?
- How hard will it be to create an album from all of this material?
- How hard will professional folk musicians find the process of learning the computer-generated tunes and recording the album?
- How will expert listeners respond to the tunes?
- What will the public think about the album?

WHO ARE THE Ó CONAILL FAMILY?

There is evidence a human’s judgement can be biased when they believe that a creative product comes from a machine. To avoid that, we created a backstory to accompany the album, and a gmail account for soliciting reviews. There is no Ó Conaill family, and we apologise for having to use this ruse. We hope you understand the need for it. (We sought and received ethics approval from the Faculty Research Ethics committee of Kingston University, UK: [https://tinyurl.com/yb7sz8su](https://tinyurl.com/yb7sz8su)).

WHO ARE WE?

Bob L. Sturm ([http://www.eecs.qmul.ac.uk/~sturm](http://www.eecs.qmul.ac.uk/~sturm)) is the principal engineer on the project. He has been an enthusiast of Irish traditional music since living in Limerick, Ireland during the summer of 2000. His day job (now Associate Professor of Computer Science in the Speech, Music and Hearing research division of the KTH Royal Institute of Technology in Stockholm) is focused on making computers work “intelligently” with sound and music data. (He also plays in sessions in Stockholm, and runs a Learners’ Session there.)

Oded Ben-Tal ([http://obental.wixsite.com/main](http://obental.wixsite.com/main)) is the composer on the project, and is interested in the potential of computers to augment creativity. In fact, he used this same system to compose a piece melding aspects of the style the system learned with his own compositional ideas ([https://tinyurl.com/yapo7g7q](https://tinyurl.com/yapo7g7q)). Ben-Tal teaches composition and music technology at Kingston University in London.

WHAT HAVE WE DISCOVERED SO FAR?

Our computer program has learned enough about real tunes that it can generate new ones that are not too bad. At the same time, we clearly see that the program knows very little about music. The latter cannot be overstated: our computer program does not know the rich history and diverse functions of this kind of music, or even the major contribution trained musicians bring to playing folk music. It is merely creating sequences of symbols that talented humans can bring to life (as our album illustrates). In spite of its clear limitations, we have found that our computer program can be a useful partner in some aspects of human musical creativity. Some amateur musicians are using this system as a pathway to becoming more creative within the tradition they know and love. For instance, when Ben-Tal showed this system to his students they immediately saw the potential. They enthusiastically produced tunes and used the parts they liked in their own music making.

WHAT DOES OUR WORK NOT SHOW?

When we discuss our work in articles, concerts, and talks, we emphasize several important points. Our work does not show, “Irish traditional music is so simple a computer can do it.” Our computer program is merely a “parlor trick” having statistical machinery that is sophisticated enough that it can create some sequences from which human experts can make nice music. Our work also does not show, “There is no need for human composers.” Music is and always will be a human activity no matter how “good” computers can be made to mimic us. Composing and learning music cannot be substituted by pressing buttons.

---

12[Which you can explore here: https://folkrnn.org](https://folkrnn.org)
13[See some examples here: https://tinyurl.com/ymb2be](https://tinyurl.com/ymb2be) [https://tinyurl.com/y6u7cznj](https://tinyurl.com/y6u7cznj)
14[Like this one, https://youtu.be/JZJBZzyHiyA](https://youtu.be/JZJBZzyHiyA)
WHAT TO DO NOW?

Our research has greatly benefited by interacting with a variety of people and viewpoints, positive, neutral and negative. Recording and releasing this album is an effort to more widely engage non-academic audiences with our research. The album is and will remain publicly available for free (downloadable from soundcloud). We want to hear any of your thoughts about the above now that you know more about the project. Considering the above, how does one’s perspective about the music on the album change, if at all?

If you would like to have your comments anonymized in our records (or deleted completely), please let us know by September 14, 2018. In any case, we will not reproduce anything you have said about the album without your permission to do so.

On September 17, 2018, we made this technical report public and distributed a press release about the album.

In the following pages, we show how each Gan Ainm appearing on the album relates to the material generated by our models. Each tune appears notated, first in its “original” form (as generated by the model) and then as edited by Banarsé (with notes colored red to show changes). Some of the changes are very minor, and others are more extensive. The musicians were free to interpret and adjust the tunes as they saw fit when recording the album.

---

16“Gan Ainm” is Irish for “without a name”.
Track 1: Gan Ainm 1

#21003, folk-rnn (v2)

Daren Banarsi edit.
Track 1: Gan Ainm 3

The Glas Herry Comment, folk-rnn (v2)

Daren Banarsi edit.

Only bars 1-16 of the generated transcription are used. Another performance of this tune can be heard as the third in this set https://youtu.be/lZKc363886Y.
Track 2: Gan Aímn 1

#11929, folk-rnn (v2)

Daren Banarse edit.

8
In this case, Banarsë combined ideas from two different generated transcriptions. The A part comes from the A part of #21294, and the B part comes from #18253.
Banarsé doubled the durations of the notes in the generated transcription and made the meter 4/4.
Track 5: Gan Ainm 1

Banarsé swapped the parts of the generated transcription to create this tune.
Track 5: Gan Ainm 2

#11906, folk-rnn (v2)

Daren Banarsë edit.
A completely different performance of this tune can be heard as the second in this set
https://youtu.be/_qpHaSwiJ-o
Track 9: Gan Ainm 1

#21184, folk-rnn (v2)

Daren Banarsë edit.
Track 9: Gan Ainm 2

Banarsë swapped the A and B parts of the generated transcription to create this tune.
Track 10: Gan Ainm 1
Track 11: Gan Ainm 1

#21013, folk-rnn (v2)

Daren Banarsi edit.
Track 11: Gan Ainm 2

Another performance of this tune can be heard as the second in this set

https://youtu.be/j7RpmmahiZQ