

様式 A-1  
(FY2024)

2024年10月10日

## サイエンス・ダイアログ 実施報告書

1. 学校名・実施責任者氏名: 山梨県立日川高等学校 組沢 佑季子
2. 講師氏名: Dr. CROSSCOMBE, M.
3. 講義補助者氏名: 堀口 維里優
4. 実施日時: 2024年 10月 3日 ( 木 ) 14:00 ~ 15: 30
5. 参加生徒: 2年生 41人、 1年生 40人、 \_\_\_\_年生 \_\_\_\_人 (合計 81人)  
備考: (例:理数科の生徒) SSH クラスの1年次生、2年次生
6. 講義題目: Collective Intelligence and Artificial Life
7. 講義概要:
8. 講義形式:  
☒対面 ・ ☐オンライン (どちらか選択ください。)
  - 1) 講義時間 70 分 質疑応答時間 20 分
  - 2) 講義方法 (例:プロジェクター使用による講義、実験・実習の有無など)  
プロジェクター使用による講義
  - 3) 事前学習  
☒有 ・ ☐無 (どちらかに○をしてください。)  
使用教材 講師から事前に送られてたシートと padlet を用いた学習
9. その他特筆すべき事項:  
  
特記事項なし

Form B-2  
(FY2024)  
Must be typed

Date (日付)  
04/10/2024 (Date/Month/Year: 日/月/年)

**Activity Report -Science Dialogue Program-**  
(サイエンス・ダイアログ 実施報告書)

- Fellow's name (講師氏名): Michael Crosscombe (ID No. P23072)
- Name and title of the lecture assistant (講義補助者の職・氏名)  
Mr. Horiguchi Ilya 堀口維里優 (M2)
- Participating school (学校名): Hikawa High School, Yamanashi
- Date (実施日時): 03/10/2024 (Date/Month/Year: 日/月/年)
- Lecture title (講義題目):  
Collective Intelligence and Artificial Life
- Lecture format (講義形式):  
◆ ☒ Onsite ・ ☐ Online (Please choose one.)(対面 ・ オンライン)((どちらか選択ください。))  
◆ Lecture time (講義時間) 80 min (分), Q&A time (質疑応答時間) 20 min (分)  
◆ Lecture style (ex.: used projector, conducted experiments)  
(講義方法 (例: プロジェクター使用による講義、実験・実習の有無など))

- Lecture summary (講義概要): Please summarize your lecture within 200-500 words.  
I covered my background such as what I studied at school, why I decided to pursue a PhD and how I became interested in multi-agent systems, robot swarms and eventually Collective intelligence. I also discussed how and why I came to Japan to pursue my research topic.

Then I introduced the topic of collective intelligence by starting with an example of collective behaviour in nature (such as flocking Starling birds). Then I discussed a model that can successfully reproduce the flocking dynamics observed in the birds and discussed how such a model can be useful, but the model itself is not an accurate representation of how the birds achieve such impressive behaviour via coordination. Then I went into some detail about how we try to learn more about biological systems (specifically, a species of queenless ants) that exhibit collective intelligence such as clustering and foraging behaviours. I introduced the process of neuroevolution and how we can use this kind of machine learning to build models of collective behaviours that might be more interpretable; meaning that we might learn more about the biological system by studying the kinds of models that computers evolve over time, just how biological systems evolve over time.

◆Other noteworthy information（その他特筆すべき事項）:

I found it very difficult to discuss my actual research in an easily understandable way for highschool Japanese students, but this is something I still ought to work on. Science communication is clearly very important and I am grateful to JSPS for allowing me this opportunity again, but I acknowledge that this was a difficult lecture for the students to comprehend despite them all being very intelligent and asking me very insightful questions at the end. I would enjoy this process more if there was more regular contact with the students over a longer period where I could introduce the research at a high level and then gather questions/ideas from the students and return with more information.

- Impressions and comments from the lecture assistant（講義補助者の方から、本プログラムに対する意見・感想等がありましたら、お願いいたします。）:

Assisting with the ALIFE outreach program was a rewarding experience. It was great to see the students' interest in artificial life and to be part of the process of introducing them to such fascinating topics. Their enthusiasm reminded me of the value of educational outreach, and I appreciated the chance to contribute to sparking their curiosity.





### Who am I?

井ノ口 大輔 (INOUCHI DAIKO) My name is Michael and I am

- 32 years old (Born 1992, 平成4年)
- I grew up in Osaka, England & アメリカ合衆国
- I'm now living in Tokyo (東京都)

よろしくお願いします。

I have been living in Japan for 2 years.