

様式 A-1

(FY2025)

2025 年 7 月 17 日

サイエンス・ダイアログ 実施報告書

1. 学校名: 東京都立科学技術高校
2. 講師氏名: Irene FRIZZA
3. 講義補助者氏名: なし
4. 実施日時: 2025 年 7 月 17 日 (木) 10:30 ~ 12:00
5. 参加生徒: 1 年生 62 人、 年生 人、 年生 人 (合計 65 人)
備考: (例: 理数科の生徒) 創造理数科と科学技術科の生徒
6. 講義題目: ロボット工学の歩みと、人型ロボットがより人間のように歩けるようにする方法
7. 講義概要: 物理リザーバー計算を用いたやわらかい適応的なジョイントを使った頑健な歩行制御の実現
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 60 分 質疑応答時間 10 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 (どちらか選択ください。)
使用教材: 講師提案のキーワードを事前に配布
9. その他特筆すべき事項:

Form B-2
(FY2025)
Must be typed

Date (日付)
2025/17/7 (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): Irene Frizza (ID No. P24707)

- Name and title of the lecture assistant (講義補助者の職・氏名)

Keiko Yasuda (english teacher)

- Participating school (学校名): Tokyo Metropolitan High School of Science and Technology

- Date (実施日時): 2025/7/17 (Date/Month/Year: 日/月/年)

- Lecture title (講義題目): Robots: Our new Friends

- 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) 60 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))

used projector and explain the lecture

- Lecture summary (講義概要): Please summarize your lecture within 200-500 words.

In this lecture, I introduced the students to the world of robotics and shared some of my personal experiences as a researcher. My goal was to show how robots are becoming a real part of our lives — not just in science fiction, but in homes, hospitals, and workplaces around the world.

I started by showing some examples of robots that many people don't realize are already part of our everyday lives, like Roomba and Sophia. Then, I shared my own journey into robotics.

The main focus of the talk was on the challenge of helping humanoid robots walk like humans. I explained why walking is actually very complex for robots, especially on uneven or slippery surfaces. I presented my research on developing a new type of robot foot that can change its stiffness in real time, using air channels and soft materials. This makes the robot more adaptable and better able to walk safely over rough terrain.

In the second part of the talk, I introduced the concept of soft joints, inspired by how our own joints work. By adding flexibility to a robot's joints, it can absorb impacts, walk more naturally, and even recover better after being pushed. I showed how we tested this in simulation and how soft joints can make robots more stable and efficient.

I closed the lecture by encouraging the students to stay curious, explore science and engineering, and consider how their ideas might shape the future of robotics. Whether in research, design, or

programming, there's room for everyone to contribute to building smarter, more helpful robots.

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

- 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。):

I had a very positive impression of the teacher during my visit to the school. They were kind, welcoming, and very supportive throughout the talk. I could see that they truly care about their students and want to give them the best opportunities to learn new things. The way they helped organize the session and encouraged the students to ask questions made everything run smoothly. It was a pleasure to meet such a dedicated and friendly teacher.

