【　第４０回熊本大学定例学長記者懇談会　】

日　　時：令和６年１２月４日（水）１４：００～１５：００（予定）

場　　所：本部棟１階　大会議室

本学出席者：熊本大学長　　小川　久雄

理事（研究・グローバル戦略担当）　　大谷　順

理事（広報・ﾌﾞﾗﾝﾃﾞｨﾝｸﾞ・行政連携担当）　　宮尾　千加子

内　　容：

１．パーキンソン病などのシヌクレイノパチーにおける病態機序の解明について（資料１）
発生医学研究所　准教授　矢吹　悌

２．日印・熊印関係の期待について（資料２）
日英ヒンディー語同時・逐次通訳者　ルチ・ネタニ氏（熊本大学大学院修了生）

３．アナリティクス型教育エコシステムにおける指導者と学習者の内省的実戦の支援について（資料３）
半導体・デジタル研究教育機構　准教授　マジュンダール・リトジット

４．その他

令和6年12月4日開催
熊本大学定例学長記者懇談会　資料１

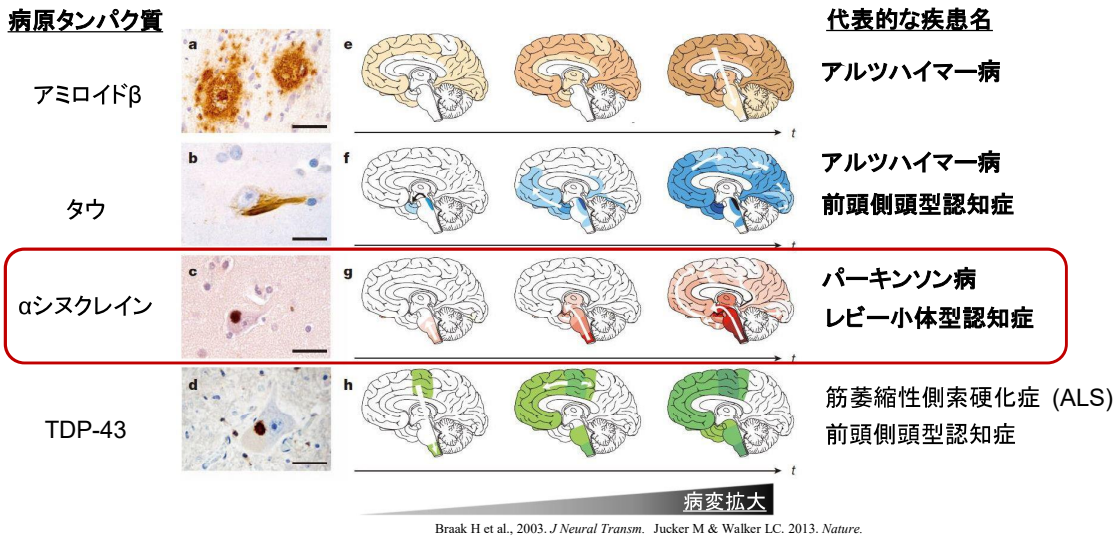
Kumamoto University　IMEG Institute of Molecular Embryology and Genetics

パーキンソン病などのシヌクレイノパチーにおける病態機序を解明
ーG4を標的に神経変性を「未病」で防ぐー

○矢吹 悌、塩田 倫史
熊本大学・発生医学研究所・ゲノム神経学分野
熊本大学・薬学部

背景：神経変性の原因タンパク質凝集メカニズムは不明である

神経変性疾患：病原タンパク質が凝集し、神経機能が低下する神経疾患の総称

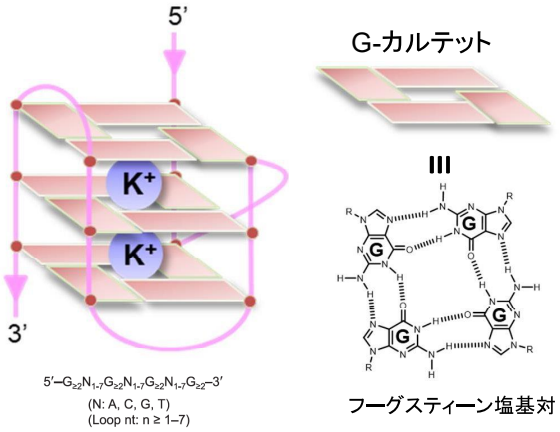


Braak H et al., 2003. *J Neural Transm.* Jucker M & Walker LC. 2013. *Nature.*

病原性タンパク質が「なぜ」凝集してしまうのかは不明であった

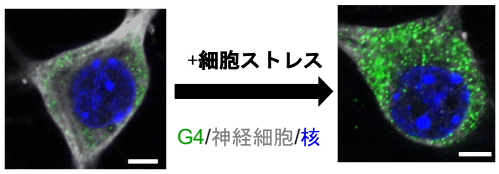
RNA グアニン四重鎖「G4」は αシヌクレインの凝集を誘導する

RNA グアニン四重鎖「G4」の構造

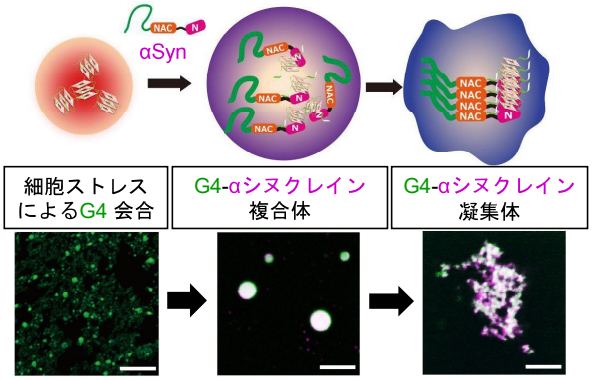


グアニン (Guanine; G) 豊富な配列で形成される DNA/RNA 構造

細胞ストレスにより「G4」が集積する



「G4」は α-シヌクレイン凝集を誘導する

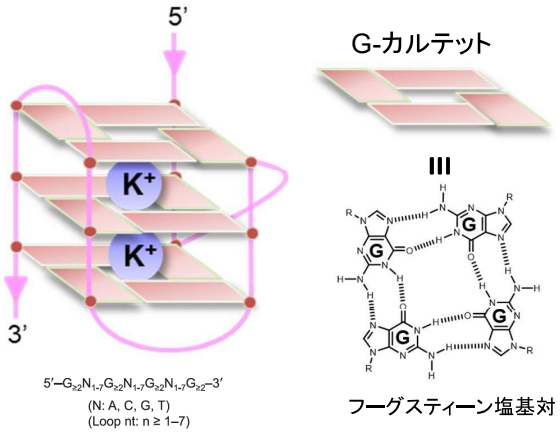


Matsuo K, **Shioda N***and **Yabuki Y***et al., ***Cell.*** (2024)

3/9

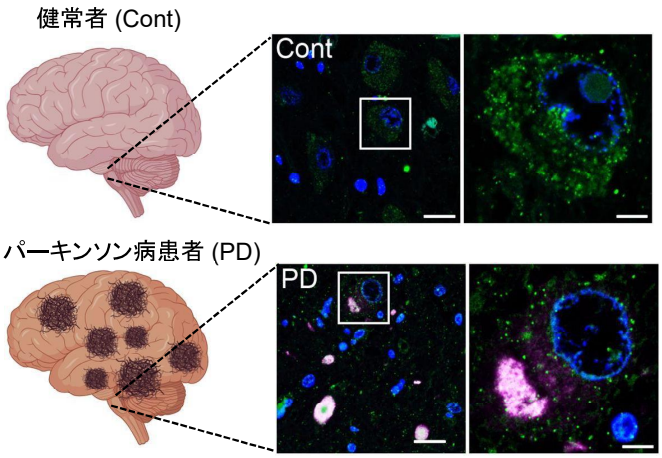
RNA グアニン四重鎖「G4」は αシヌクレインの凝集を誘導する

RNA グアニン四重鎖「G4」の構造



グアニン (Guanine; G) 豊富な配列で形成される DNA/RNA 構造

パーキンソン病患者の α-シヌクレイン凝集体の 90%以上に「G4」が包埋されている



G4/αシヌクレイン凝集体/核

Matsuo K, **Shioda N***and **Yabuki Y***et al., ***Cell.*** (2024)

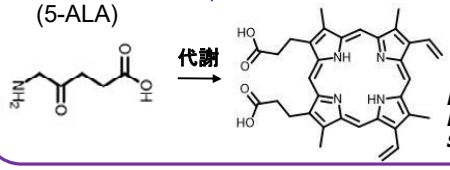
RNAの構造「G4」の集積が神経変性のトリガーとなる

4/9

G4 作用薬はシヌクレイノパチー病態を予防しうる

プロトポルフィリン IX
(G4RNA の構造を展開する)

アミノレブリン酸
(5-ALA)

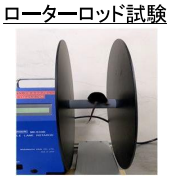


Nature Medicine (2018)
BBRC (2020)
Science Advances (2021)

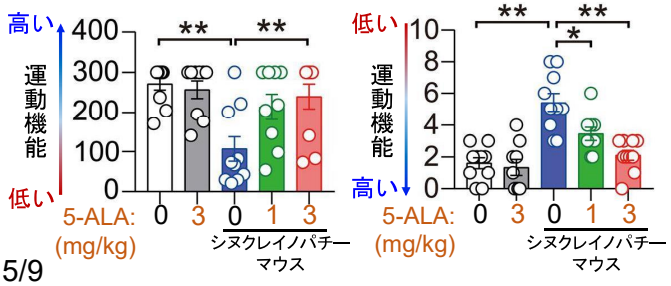
5-ALA をシヌクレイノパチーマウスに投与した

5-ALA はシヌクレイノパチーマウス運動機能低下を予防した

ローターロッド試験

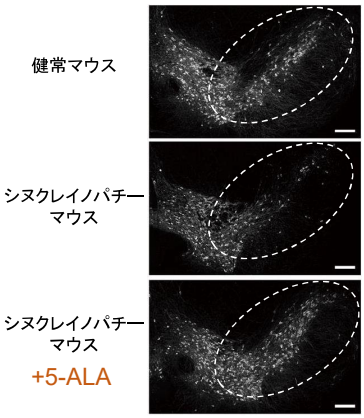


ビームウォーキング試験

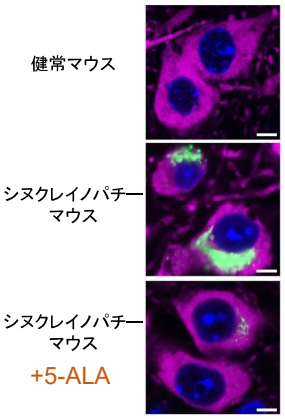


5-ALA はシヌクレイノパチーモデルマウスの神経変性を予防した

5-ALAはドパミン神経細胞低下を予防した



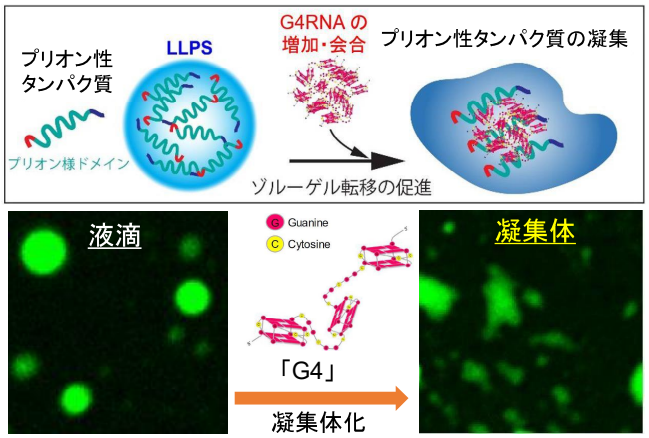
5-ALAはαシヌクレイン凝集を予防した



5/9

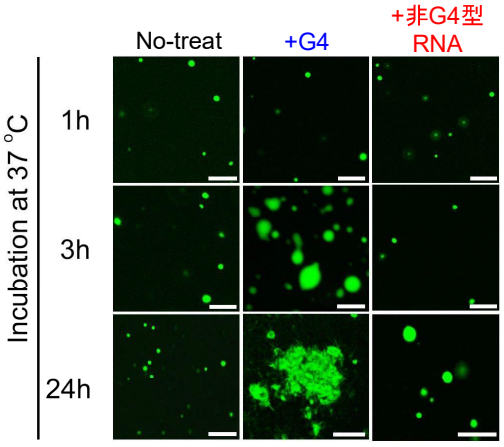
「G4」は他の病原タンパク質の凝集にも寄与する

「G4」は遺伝性神経変性疾患の病原タンパク質を凝集する



Asamitsu S#, Yabuki Y# and Shioda N* et al., ***Sci Adv.*** (2021)

「G4」はタウ凝集を促進する



Yabuki Y* and Shioda N* et al., ***J Biol Chem.*** (2024)

「G4」による病原タンパク質凝集機構が神経変性疾患に共通した
分子メカニズムであることを示唆している

6/9

まとめ

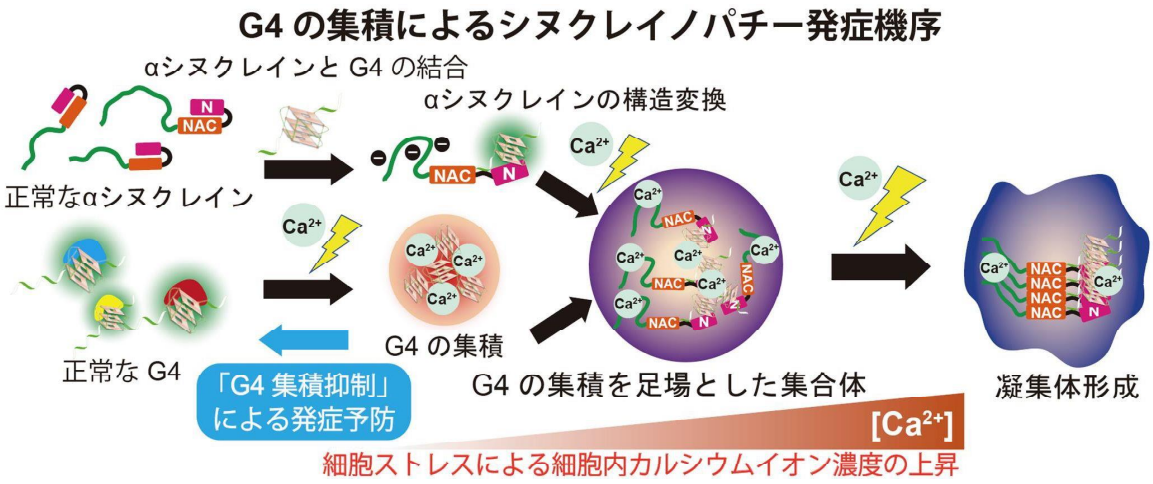
本研究成果のポイント

●パーキンソン病などのシヌクレイノパチーは、細胞内でのαシヌクレインの凝集により引き起こされるが、その凝集機序は不明であった。

●αシヌクレインが**「グアニン四重鎖（G4）」の集積**を足場として凝集することを明らかにした。

●**G4の集積を抑制する薬剤**は、αシヌクレインの凝集を阻害し、**進行性の運動機能障害を予防**した。

●**「G4の集積抑制」が神経変性疾患の「未病」に向けた創薬に繋がる可能性がある**。



7/9

プレスリリース

配信先：文部科学記者会、科学記者会、熊本県内報道機関

熊本大学
Kumamoto University

令和 6 年 10 月 21 日

報道機関　各位

熊本大学

パーキンソン病などの
シヌクレイノパチーにおける病態機序を解明
－G4 を標的に神経変性を「未病」で防ぐ－

（ポイント）

- パーキンソン病などのシヌクレイノパチーは、細胞内でのαシヌクレインの凝集により引き起こされますが、その凝集機序は不明でした。
- 本研究グループは、αシヌクレインが「グアニン四重鎖（G4）」※の集積を足場として凝集することを明らかにしました。
- G4の集積を抑制する薬剤は、シヌクレイノパチーモデルマウスにおけるαシヌクレインの凝集を阻害し、進行性の運動機能の低下を予防しました。
- G4の集積は、遺伝性だけでなく孤発性の神経変性の原因にもなることから、「G4の集積抑制」が神経変性疾患の「未病」に向けた創薬に繋がります。

（概要説明）

熊本大学発生医学研究所の塩田倫史教授、矢吹悌准教授および松尾和哉助教らの研究グループは、シヌクレイノパチーの発症機序を新たに解明しました。

8/9

https://www.kumamoto-u.ac.jp/whatsnew/seimei-sentankenkyu/20241021

謝辞

熊本大学発生医学研究所・熊本大学薬学部

塩田 倫史 (教授) 松尾 和哉 (助教) 朝光 世煌 (理研へ異動)

堀 かりん (研究員) 酒井 勇輔 (M2) 小宮 銀仁 (M1) 臼杵 慎吾

鳥取大学工学部蛋白質工学

溝端 知宏 (教授) 河田 康志 (教授、副学長)

仙台西多賀病院

武田 篤 (院長)

大泉 英樹 (脳神経内科医長)

仙台医療センター

鈴木 博義 (病理)

9/9

競争的獲得研究費

国立研究開発法人 日本医療研究開発機構
Japan Agency for Medical Research and Development
AMED

「脳とこころの研究推進プログラム（領域横断的かつ萌芽的脳研究プロジェクト）」

PRIME

「プロテオスタシスの理解と革新的医療の創出」

創発的研究支援事業
Fusion Oriented REsearch for disruptive Science and Technology

「JST創発的研究支援事業」

科研費
KAKENHI

【お問い合わせ先】
熊本大学発生医学研究所ゲノム神経学分野
担当：教授　塩田　倫史
　　准教授　矢吹　悌
電話：096-373-6633
e-mail：　shioda@kumamoto-u.ac.jp
　　yabukiy@kumamoto-u.ac.jp

令和6年12月4日開催
熊本大学定例学長記者懇談会　資料２

日印・熊印関係期待

RUCHI NAITHANI　2024年 12 月 4 日　@熊本大学

自己紹介

Ruchi Naithani
日―英―ヒンディー語　同時・逐次通訳者

熊大在学履歴：1990年10月～1995年3月まで
文学部言語学科
３0年以上の日英通訳者としての履歴あり。
10年間日本企業とのインドJVにて社外取締役を務める
12年間日本のIT企業で勤務。当時インドでの子会社を経営。
熊本大学修士課程修了（専攻：言語学）
インドネール大学で学士取得（専攻：日本語）
日本滞在歴：合計15年。

2

熊大での貴重な日々

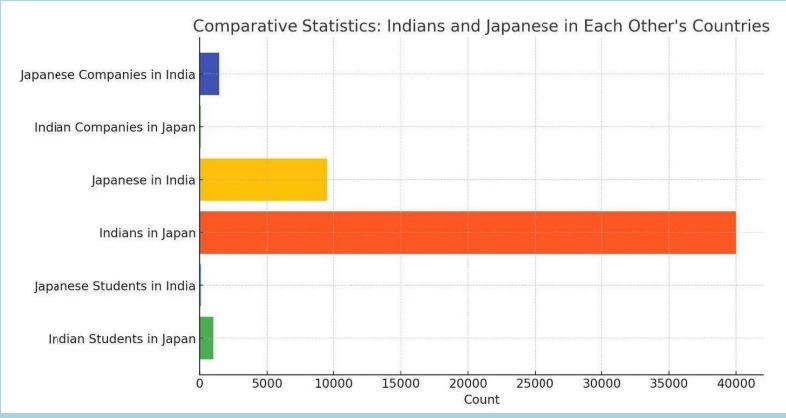
留学生時代

温かく迎えられた
熱い応援とサポートを得た
楽しい時間を過ごした

日印関係は？

3

比較はよくないが。。。



4

今後の期待と希望

もっとインド人留学生を熊大へ

適切な受け皿をご用意頂きたい

熊大生をインドの大学へ

必要なサポートを支援

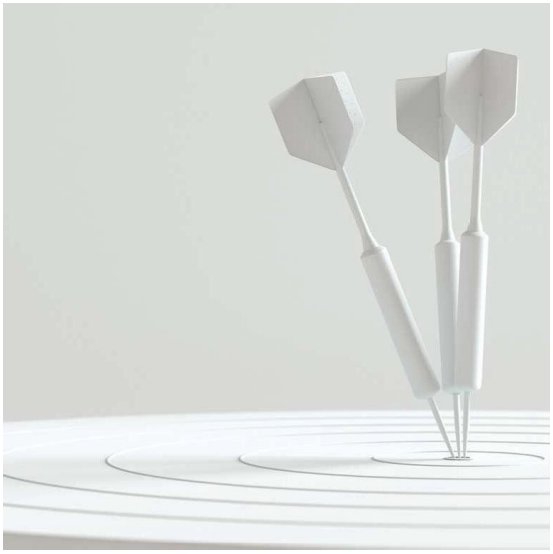
啓発活動促進

文化祭、セミナー交流会

未来に繋げる

有望な分野

5



ありがとうございました

Ruchi Naithani

2024 年 12 月 4 日　　6

令和6年12月4日開催
熊本大学定例学長記者懇談会　資料３

REISI 熊本大学 半導体・デジタル研究教育機構
Research and Education Institute for Semiconductors and Informatics

熊本大学 Kumamoto University

熊本大学大学院 Graduate School of Instructional Systems
社会文化科学教育部 教授システム学専攻

Supporting Teachers and Learners for Reflective Practices in an Analytics-driven Educational Ecosystem

アナリティクス型教育エコシステムにおける
指導者と学習者の内省的実践の支援

Dr. Rwitajit MAJUMDAR

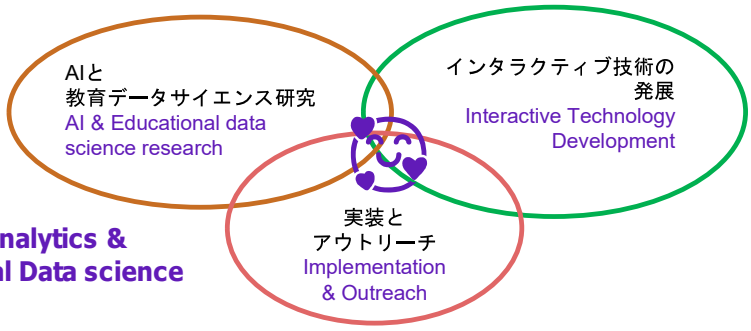
Associate Professor
Kumamoto University, Japan
rwito.info

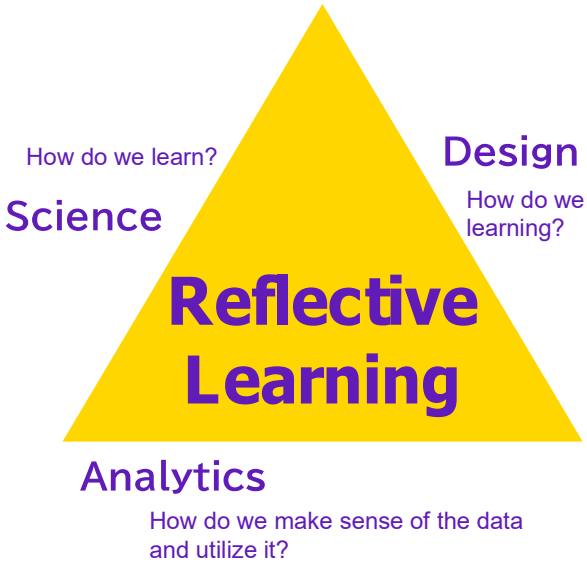
4 Dec, 2024

Funding acknowledgement
基盤研究(B) 22H03902, 23K25698
国際共同研究加速基金(海外連携研究) 24KK0051

1

Learning Analytics & Educational Data science





学習者が自己主導型スキルを促進することを支援
Assisting students to foster Self-directed learning skills

データを活用した学習者の自己主導型能力の育成
Supporting acquisition of self-directed skills by the learners using data

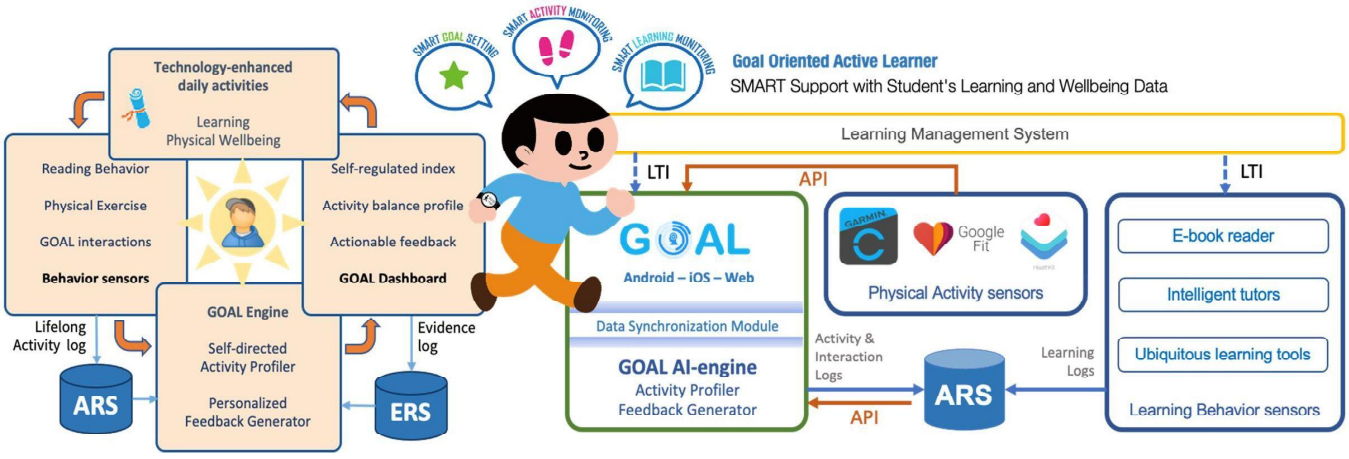
データ駆動型アプローチ
Data driven approaches

教師が**内省実践者**になるための支援
Assisting teachers to be **Reflective practitioner**

教師の指導実践を支援するための
エビデンスに基づくモデルの開発
Developing an evidence based model to assist the teachers in their instructional practices.

3

基盤研究(B) 22H03902 2022-04-01 – 2025-03-31



Data-Driven

Cross-context behaviors tracking
Self-direction skill quantification
Activity habit extraction
AI-driven services to support skill development
Evidence extraction for integration in practice

Designing campaigns for out of class activities.

- Spring trek to Mt. Rokko!
- Reading in Fall!

Long term Implementation

Majumdar, R., Li, H., Yang, Y., & Ogata, H. (2024). GOAL - A data-rich environment to foster self-direction skills across learning and physical contexts. *Educational Technology & Society*, *27*(3), 61-82. https://doi.org/10.30191/ETS.202407_27(3).RP04

GOAL - A data-rich environment to foster self-direction skills across learning and physical contexts

Rwitajit Majumdar[1,3*], Huiyong Li[1], Yuanyuan Yang[2] and Hiroaki Ogata[1]
[1]Academic Center for Computing and Media Studies, Kyoto University, Japan // [2]Graduate School of Informatics, Kyoto University, Japan //[3] Research and Education Institute for Semiconductors and Informatics, Kumamoto University, Japan // majumdar@kumamoto-u.ac.jp // li.huiyong.2t@kyoto-u.ac.jp // 44.yangoo@gmail.com // ogata.hiroaki.3e@kyoto-u.ac.jp
*Corresponding author

(Submitted February 1, 2023; Revised August 25, 2023; Accepted September 7, 2023)

ABSTRACT: Self-direction skill (SDS) is an essential 21st-century skill that can help learners be independent and organized in their quest for knowledge acquisition. While some studies considered learners from higher education levels as the target audience, providing opportunities to start the SDS practice by K12 learners is still rare. Further, practicing such skills requires a concrete context and scaffolding during the skill acquisition. This article introduces the Goal Oriented Active Learner (GOAL) system that facilitates SDS acquisition in learners utilizing daily activities as context. The GOAL architecture integrates learning logs from online environments and physical activity logs from wearable trackers to provide a data-rich environment for the learners to acquire and practice their SDS. The GOAL users follow DAPER, a five-phase process model, to utilize the affordances in the system while practicing SDS. We implemented the GOAL system at a K12 public institution in Japan in 2019. Learners used the online environments for extensive reading and smartwatches for tracking walking and sleeping activities. This study analyzes detailed interaction patterns in GOAL while learners planned and monitored their self-directed actions. The results illustrate the strategies for DAPER behaviors that emerge in different activity contexts. We discuss the potentials and challenges of this technology ecosystem that connects learners' learning logs and physical activity logs, specifically in the K12 context in Japan and, more generally, from the learning analytics research perspective to provide a context to practice SDS.

Keywords: Learning and Evidence Analytics Framework (LEAF), Evidence-based education, Learning analytics, K-12 education, eBook, Smartwatch

Impact factor 4.7

Companion Proceedings 13th International Conference on Learning Analytics & Knowledge (LAK23)

3 Years of GOAL project in Public School: Leveraging Learning & Smartwatch Logs for Self-directed Learning

Rwitajit Majumdar, Yuanyuan Yang, Huiyong Li, Brendan Flanagan & Hiroaki Ogata
Kyoto University, Japan
majumdar.rwitajit.4a@kyoto-u.ac.jp

ABSTRACT: The GOAL project aimed to collect and synchronize learners' data from physical activity sensors as well as online learning tools to design data-driven services. We extend the potential of learning tools interoperability (LTI) protocol to link physical activity and sensor data from smartwatch platforms. Our primary purpose is to provide this synchronized self-data to the learners for reflection and promoting self-directed learning habits. The project is partially supported by multiple national funding and implemented at scale at a combined public junior high and high school since the summer of 2019. Across the three years more than 1300 users have used the different services built on GOAL. We collected 5,92,599 daily learning and physical activity logs. Further, 1,72,674 logs of user interaction within the GOAL application were collected to identify self-directed behaviors. This paper overviews the research journey of GOAL over the last three years highlighting the implementation challenges and how they were overcome. As an ongoing project it discusses the potential of anonymous yet linked multi-attribute learner data and its implication for research and development in the field of learning analytics.

Keywords: GOAL, Smartwatch, Learning Logs, Self-directed Learning, DAPER model, LEAF

Impact on cross-context activities

Educational Impact

Computers & Education 171 (2021) 104239

Contents lists available at ScienceDirect

Computers & Education

journal homepage: www.elsevier.com/locate/compedu

Goal-oriented active learning (GOAL) system to promote reading engagement, self-directed learning behavior, and motivation in extensive reading

Huiyong Li [a], Rwitajit Majumdar [b,*], Mei-Rong Alice Chen [c], Hiroaki Ogata [b]

[a] Graduate School of Informatics, Kyoto University, Yoshida-Honmachi, Sakyo-ku, Kyoto, Japan
[b] Academic Center for Computing and Media Studies, Kyoto University, Yoshida-Nihonmatsu, Sakyo-ku, Kyoto, Japan
[c] Graduate Institute of Digital Learning and Education, National Taiwan University of Science and Technology, 43, Sec.4, Keelung Rd., Taipei, 106, Taiwan

ARTICLE INFO

Keywords:
21st century abilities
Teaching/learning strategies
Data science applications in education
Applications in subject areas
Secondary education

ABSTRACT

Self-directed learning (SDL) ability, its usefulness in higher education, and life-long learning have been highlighted in previous literature. However, understanding the effects of SDL ability in the school settings, specifically how it affects learners' affective and behavioral outcomes, remains missing and calls for further investigation. Given this research gap, this study developed a goal-oriented active learning system, GOAL, to support students' SDL and investigated how students' perceptions of SDL ability affect their reading engagement, SDL behavior, and motivation for extensive reading. The results showed that the high SDL ability students demonstrated significantly more reading engagement, SDL behaviors, motivation and autonomy for extensive reading than those with low SDL ability. These findings suggested that an SDL support environment could be exploited as a useful tool to support foreign language learning in the schools; however, the affective and behavioral outcomes created by the environment were affected to varying degrees by the levels of students' SDL ability. The study provided implications for researchers studying extensive reading and SDL environments, as well as for educators seeking to improve extensive reading with SDL strategy usage.

C&E 2021 Impact on extensive reading

Impact factor 8.9

INTERACTIVE LEARNING ENVIRONMENTS
https://doi.org/10.1080/10494820.2021.1937660

Routledge
Taylor & Francis Group

Analysis of self-directed learning ability, reading outcomes, and personalized planning behavior for self-directed extensive reading

Huiyong Li [a], Rwitajit Majumdar [a], Mei-Rong Alice Chen [b], Yuanyuan Yang [c] and Hiroaki Ogata [a]

[a]Academic Center for Computing and Media Studies, Kyoto University, Kyoto, Japan; [b]Graduate Institute of Digital Learning and Education, National Taiwan University of Science and Technology, Taipei City, Taiwan; [c]Graduate School of Informatics, Kyoto University, Kyoto, Japan

ABSTRACT

Self-directed learning (SDL) ability, its usefulness in higher education and life-long learning have been highlighted in previous literature. However, there has been much less understanding of the effects of SDL ability in the school settings, specifically the effects on learners' SDL behaviors and processes. To address this limitation, this study investigated the relations between SDL ability, SDL behaviors, and reading outcomes and further explored the process of planning behaviors in SDL. This study examined the context of SDL for extensive reading using a goal-oriented active learning system, GOAL. The results showed that the high SDL ability students demonstrated significantly more reading outcomes in terms of books completed and the number of days read than those with low SDL ability. The high SDL ability students engaged significantly more in planning behaviors, that were found to be significantly correlated with reading outcomes, than the low SDL ability students. Cluster analysis and transition analysis also differentiate groups of learners with different planning behaviors. These findings suggested that the learning behaviors and outcomes facilitated by the environment were affected to varying degrees by the levels of students' SDL ability, and personalized feedback can be created using the SDL behavioral variables and patterns in the environment.

ARTICLE HISTORY
Received 11 May 2021
Accepted 28 May 2021

KEYWORDS
Self-directed learning; extensive reading; learning behavior; planning behavior; secondary school

ILE 2021 Impact on SDL behavior

Impact factor 4.5

Recent updates

Kashihara, A. et al. (Eds.) (2024). Proceedings of the 32nd International Conference on Computers in Education. Asia-Pacific Society for Computers in Education

Comparison of Learners' Self-Direction Behavior Across Contexts and Phases

Junya ATAKE[a*], Chia-Yu HSU[a], Huiyong LI[b], Izumi HORIKOSHI[c], Rwitajit MAJUMDAR[d] & Hiroaki OGATA[c]
[a]Graduate School of Informatics, Kyoto University, Japan
[b]Research Institute for Information Technology, Kyushu University, Japan
[c]Academic Center for Computing and Media Studies, Kyoto University, Japan
[d]Research and Education Institute for Semiconductors and Informatics, Kumamoto University, Japan
*atake.junya.86t@st.kyoto-u.ac.jp

Abstract: This study investigates the transferability of Self-Direction behavior across different contexts and phases of learning using the GOAL system. Self-directed learning (SDL) is crucial for lifelong learning. It is significantly influenced by Self-Direction Skills (SDS), a meta-skill that is said to be transferable across different contexts, including the ability to identify learning needs, set goals, select strategies, and evaluate outcomes. Utilizing log data collected from Japanese junior high schools and analyzed using the iSAT system, we explored how Self-Direction behavior acquired in one context can be transferred to another and how these skills vary across the SDL phases. The results indicated that the Self-Direction behavior transferred between different activities and phases. In addition, the way of transfer is suggested to vary from phase and context. This study provides useful insights for the design and guidance of SDL support systems in educational programs. It suggests that it is important for educators to identify factors that facilitate the development and transfer of SDS.
Keywords: Self-directed Learning, Behavior, Across Contexts, GOAL system

Skill building behaviors across context

t al. (Eds.) (2024). Proceedings of the 32nd International Conference on Computer
Asia-Pacific Society for Computers in Education

esigning Recommendations fo uctive Learning Habit-Building Learning Logs

Chia-Yu HSU[a*], Izumi HORIKOSHI[b], Huiyong LI[c], Rwitajit MAJUMDAR[d] & Hiroaki OGATA[b]
[a]Graduate School of Informatics, Kyoto University, Japan
emic Center for Computing and Media Studies, Kyoto University, J
search Institute for Information Technology, Kyushu University, Jap
esearch and Education Institute for Semiconductors and Informatic
Kumamoto University, Japan
*hsu.chiayu.26t@st.kyoto-u.ac.jp

act: This study looks at learning habits of temporal regularity in learning acti
g such habits involves learners' regulation of their behaviors and rec
g strategies for time management, which is a cornerstone of self-regu
g (SRL). Given the importance of habit-building in education, Learning Ana
echniques have been applied to various long-term supports by monit
rs' habitual behaviors from the trace data. However, building a learning
not always mean the productive use of time. Scant supports atter
mending learners by building which habit can improve their learning produc
, this study proposes recommendations for productive learning habit-bu
arning logs. We focus on the context of English reading in a Japanese
chool and design an algorithm to compute a recommended learning time
rmore, we collect learners' perceptions of their productivity and learning s
rent times of the day. The comparison between self-report and log data pre
arners are not aware of their learning as the detection from their learning
nplies the potential of the proposed recommendations for facilitating learn
roductive learning habits. Specifically, our study can suggest an optimal ti
g plans and provide learners with a sustainable cue to automate lea
behaviors from long-term perspectives. By building productive learning habits, lea
can become more engaged in their studies as well as lead more balanced lives.

Keywords: Learning habits, learning analytics, learning productivity, recommenc

Designing Habit-building dashboard

ICCE 2024
International Conference on Computers in Education
MANILA, PHILIPPINES

Kashihara, A. et al. (Eds.) (2024). Proceedings of the 32nd International Conference on Computers in Education. Asia-Pacific Society for Computers in Education

Classifying Self-Reflection Notes: Automation Approaches for GOAL System

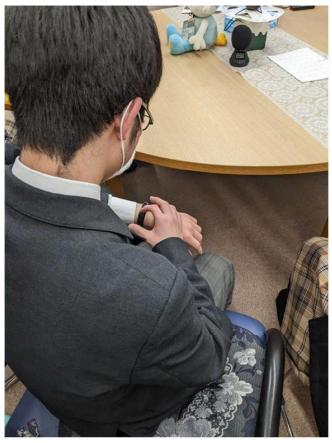
Zixu WANG[a*], Chia-Yu HSU[a], Izumi HORIKOSHI[b], Huiyong LI[c], Rwitajit MAJUMDAR[d] & Hiroaki OGATA[b]
[a]Graduate School of Informatics, Kyoto University, Japan
[b]Academic Center for Computing and Media Studies, Kyoto University, Japan
[c]Research Institute for Information Technology, Kyushu University, Japan
[d]Research and Education Institute for Semiconductors and Informatics, Kumamoto University, Japan
*wang.zixu.78d@st.kyoto-u.ac.jp

Abstract Self-directed learning (SDL) is considered a crucial skill for 21st-century learners, promoting personalized and responsive educational experiences. This study explores the untapped potential of self-reflection, particularly in e-learning environments. The research focuses on self-reflection notes, which contain strategies past students adopted when facing different situations or challenges. These notes can help current or future students facing similar situations. In this study, students take tests weekly and leave their self-reflection notes after tests. In these notes students recorded their feelings and issues, offering perspectives and insights that experts might overlook or misunderstand in some details, thus failing to provide appropriate assistance. Extracting and categorizing information from self-reflection notes is crucial to further utilize this data. Our research introduces a machine learning-based approach that effectively classifies these self-reflection notes such as cognitive, metacognitive, experiential, and irrelevant text. We compare the performance of BERT, based on the transformer architecture, with traditional machine learning classifiers such as Support Vector Machines (SVM) and Random Forests (RF). Additionally, we enhanced the BERT model by training it on synthetic data generated through GPT-4 and employing a hybrid loss combining Supervised Contrastive Learning (SCL) and Cross-Entropy (CE) to improve classification capabilities. Our results indicate that the BERT model, enhanced with advanced training techniques, outperforms traditional models in classifying learning strategies from self-reflection notes. This study not only advances the understanding of SDL in online learning environments but also demonstrates the potential of tailored machine-learning solutions to foster more effective and adaptive learning strategies.

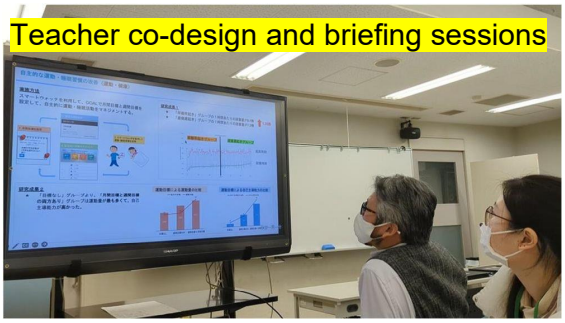
Keywords: Self-directed Learning (SDL), Self-reflection, BERT, Supervised Contrastive Learning, GOAL system

AI (Natural Language processing) for designing social support

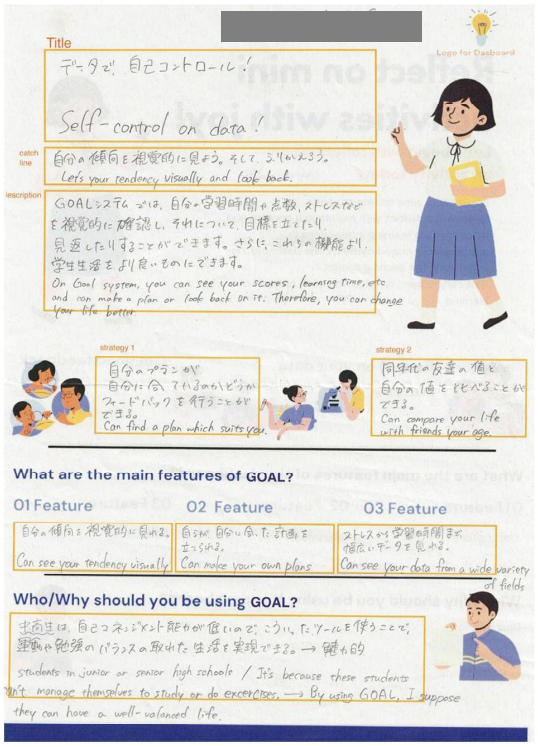
Student co-design session

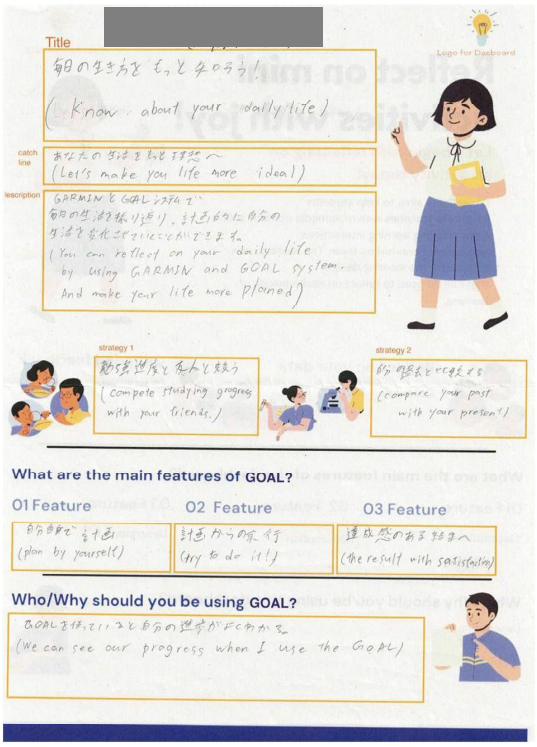


Teacher co-design and briefing sessions



9



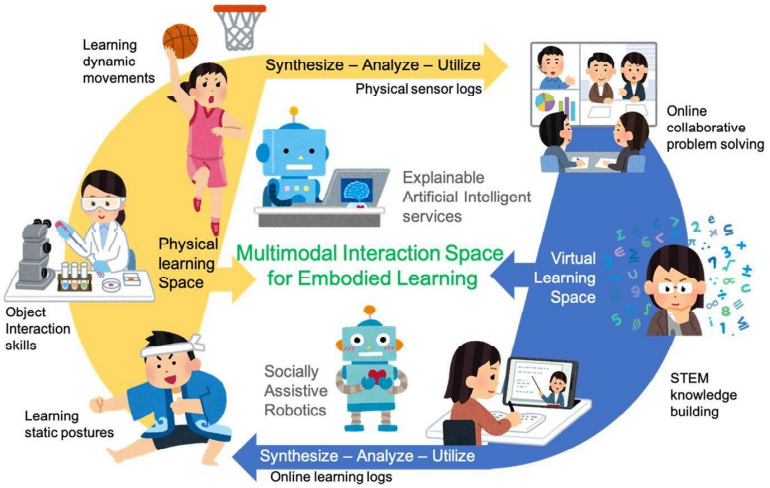


Students engaged in the GOAL system were selected for focus group + co-design

They created posters for their juniors!

10

国際共同研究加速基金(海外連携研究) 24KK0051 (2024-09-09 – 2027-03-31)



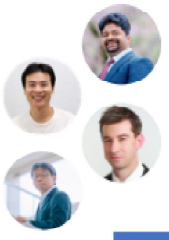
Background of the project

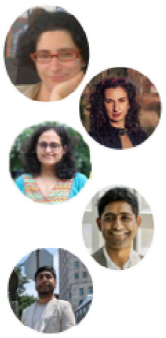
Supporting Cognitive and Psychomotor skills of learning	online space	physical space
Instructional / Learning Design	o	o
Learning Log synthesis	o	Δ
Agent based feedback	o	X
Learning evidence extraction	Δ	X
Bridging cyber-physical learning activities	X	X

miXai^learn: Multimodal Interactions, and Explainable AI for Embodied learning

Research Members

- Prof. Rwitajit MAJUMDAR (Associate Professor, Kumamoto University, Japan)
  PI role: Learning analytics, Human-data interaction design.
- Prof. Huiyong LI (Assistant Professor, Kyushu University, Japan)
  co-PI role: Self-directed learning support infrastructure.
- Prof. Brendan FLANAGAN (Associate Professor, Kyoto University, Japan)
  co-PI role: Explainable AI, Multimodal learner modeling.
- Prof. Shinichiro KUBOTA (Associate Professor, Kumamoto University, Japan)
  co-PI role: AI enhanced Instructional design.
- Prof. Olga C. SANTOS (Associate Professor, UNED, Spain)
  international-PI role: AI for psychomotor skill development, Embodied learning.
- Prof. Irene-Angelica CHOUNTA (Associate Professor, University of Duisburg-Essen, Germany)
  co-PI role: Adaptive feedback based on computational learning analytics.
- Prof. Aditi KOTHIYAL (Assistant Teaching Professor, IIT Gandhinagar, India)
  co-PI role: Socially assistive robotics for learning, Learning sciences.
- Prof. Prajakt Pande (Assistant Professor, SMU Texas, USA)
  co-PI role: Embodied cognition, Science education.
- Dr. Soumyadeep Bhattacharya (Principal engineer,Microsoft AI, Vancouver, Canada)
  co-PI role: Game engine physics, Computational locomotion, Reinforcement learning.





visits

熊本大学 Kumamoto University REISI UNED Microsoft

KYUSHU UNIVERSITY UNIVERSITÄT DUISBURG ESSEN

invitations

Multi-perspective evaluation of implemented framework in Japan.
Data curation, modeling and integration in Japanese university curriculum.

Kashihara, A. et al. (Eds.) (2024). Proceedings of the 32nd International Conference on Computers in Education. Asia-Pacific Society for Computers in Education

Exploring Cognitive Engagement in AI-driven Adaptive Psychomotor Sport Training

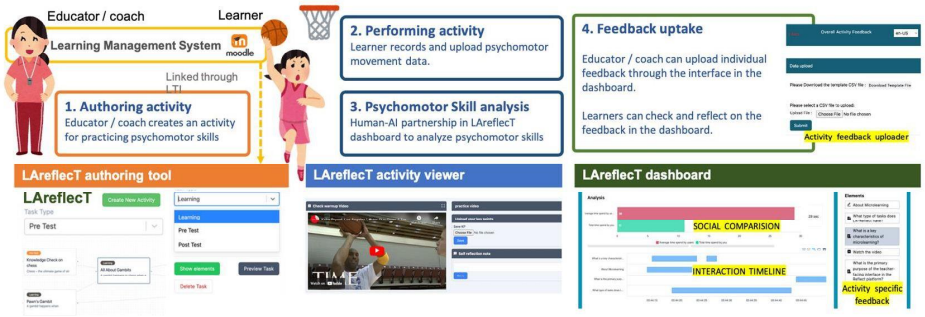
Miguel PORTAZ[ab] *, Rwitajit MAJUMDAR[c] & Olga C. SANTOS[ab]

[a]*PhyUM Research Center, UNED, Spain*
[b]*Artificial Intelligence Department, UNED, Spain*
[c]*Research and Educational Institute for Semiconductors and Informatics, Kumamoto University, Japan*

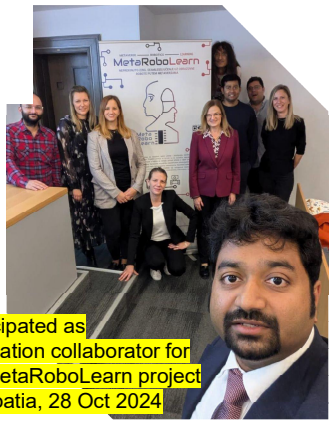
*mportaz@dia.uned.es

Abstract: This paper explores the dynamics of learning interactions between practitioners (those learning skills for real-world activities, sports trainee), and facilitators (those guiding the learning process, sports coach), with a focus on cognitive engagement in adaptive psychomotor learning contexts. Furthermore, this paper examines how to establish an appropriate environment for replicating tangible activities, such as creating optimal conditions for learning how to move in sport scenarios. In particular, we explore how to personalize psychomotor learning approaches through Learning Management Systems (LMS) where the personalization of the learning of motor skills is driven by the Sensing, Modeling, Design and Delivery (SMDD) process model that is based on Artificial Intelligence (AI) support, and the optimization of the learning workflow is managed by the *Learning Analytics' enhanced Reflective Task (LA-ReflecT)* platform integrated in Moodle LMS.

Keywords: Psychomotor Learning System, Agility Drill Test, Learning Management System, Basketball, Cognitive Engagement, LA-ReflecT



運動技能の発達における専門知識のレベルを評価する能力に基づいた心理運動学習システムの開発は、我々の研究の道における最初のマイルストーンを示し、人間中心のアプローチを追求する心理運動学習システムの開発に向けた進化への道を切り開きました。したがって、ハイブリッドインテリジェンスの原則の実現を保証する方法論的エンジニアリング要素を導入することの重要性は、スポーツの才能の開発からeラーニングツールを通じた心理運動学習を促進する要素の導入に至るまで、幅広い背景を持つ今後の開発において、それらを取り入れることにより、我々の研究の継続を示します。



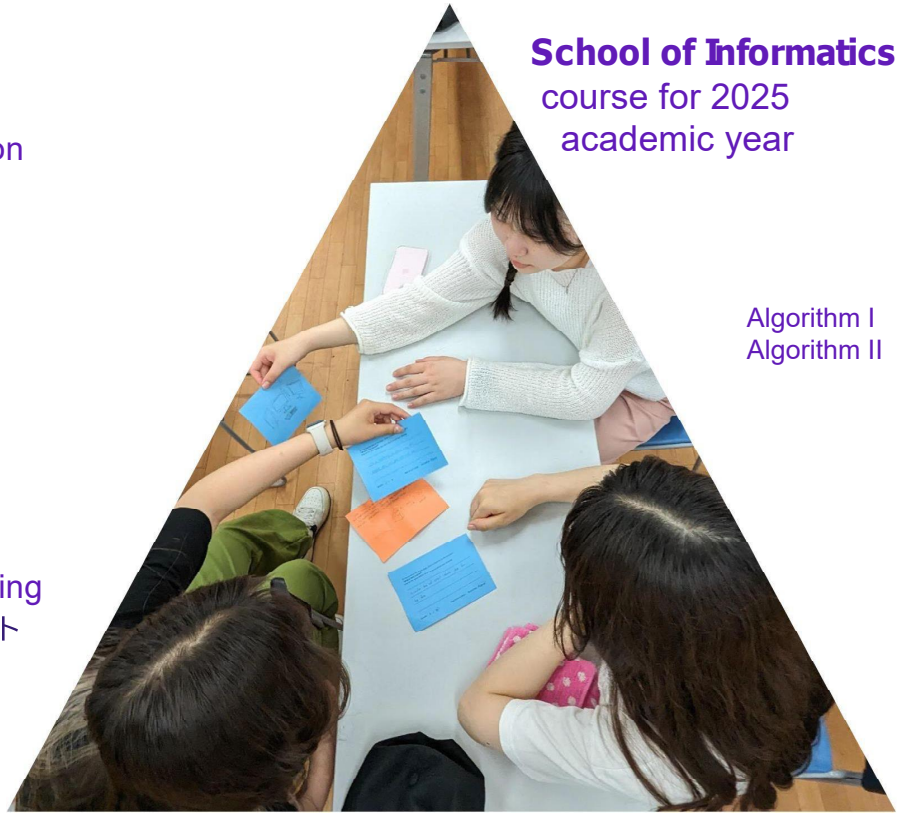
Participated as internation collaborator for EU MetaRoboLearn project in Croatia, 28 Oct 2024

English as medium of Instruction
英語を指導の媒体に

Open Educational Content
開かれた教育コンテンツ

Learner-centric active learning
学習者中心の能動的な学習

Supporting project-based learning
プロジェクトベースの学習をサポート



School of Informatics
course for 2025
academic year

Algorithm I
Algorithm II

Learning Analyst support Learning Experiences with data!

学習分析者は、データを使用して学習体験をサポートします!

What kind of data can be collected?
どのようなデータが収集できるのか

What kind of insights can be interesting?
どのような考察が興味深いのか

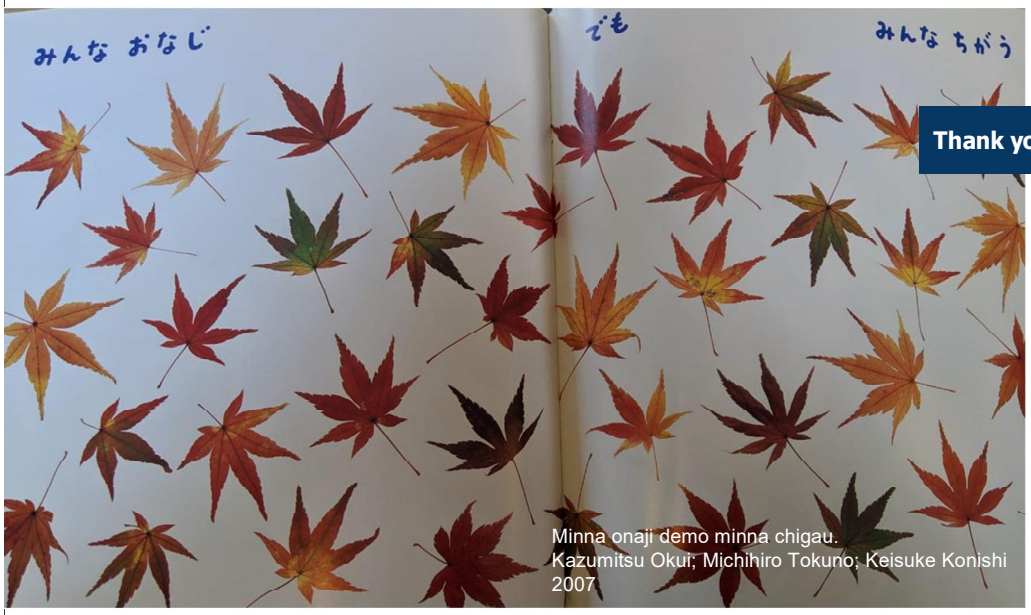
What kind of analysis can provide those insights?
どのような分析がその考察を浮かび上がらせるのか

What kind of interaction design is needed?
人とシステムを結ぶどのような対話設計が必要か

What is the measure of effectiveness and how can we track learning behavior change?
効果の測定方法は何か、学習行動の変化をどうやって追跡できるか

How can we store the evidence of effective practice for the next round?
次の段階のために効果的な実践の証拠をどのように保存できるか

In what other context can it be applicable?
他にどのような場面で活用できるか



Minna onaji demo minna chigau.
Kazumitsu Okui; Michihiro Tokuno; Keisuke Konishi
2007

Thank you for your attention!

rwito.info
majumdar@kumamoto-u.ac.jp