Berlin Conference for Student Research 2024

Liebe Teilnehmende, liebe Unterstützende,

das Organisationsteam möchte sich hiermit nochmal ganz herzlich bei Ihnen allen dafür bedanken, dass Sie an unserer Konferenz teilgenommen haben und damit zum Erfolg dieser Veranstaltung beigetragen haben.

Ein besonderer Dank geht an unsere Vortragenden für ihre inspirierenden Beiträge, an die Workshopleitenden für die Organisation praxisnaher Sessions sowie an den Caterer, der uns hervorragend versorgt hat. Auch unserem Fotografen danken wir für das Einfangen unvergesslicher Momente.

Dank an alle Teilnehmenden – Ihr habt diese Veranstaltung zu einem Erfolg gemacht.
Wir freuen uns auf ein Wiedersehen im nächsten Jahr!

Mit ganz herzlichen Grüßen,
das StuROP[x]-Team


Berlin Conference
for Student Research
CHARITÉ
Berlin University Alliance
2
Haus
EG
Sozialraum
WC
Behinderten-WC
Kopierer
2
Haus
Musik an der Humboldt-Universität
3.OG
Fritz-Reuter-Saal
1.OG
Hugo-Distler-Saal
Seminarräume
2.102, 2.302, 2.402


Berlin University
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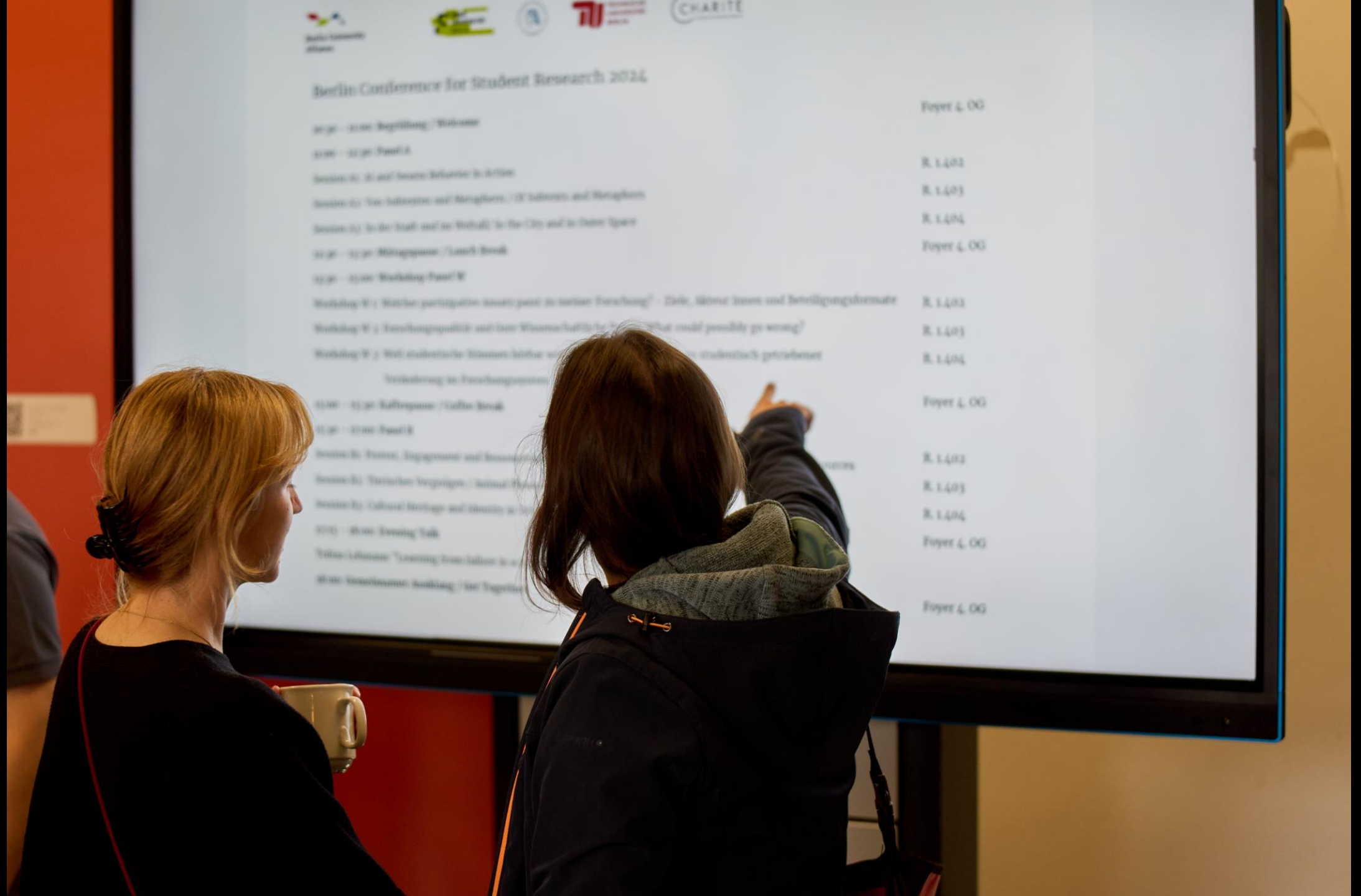
Berlin Conference for Student Research 2024
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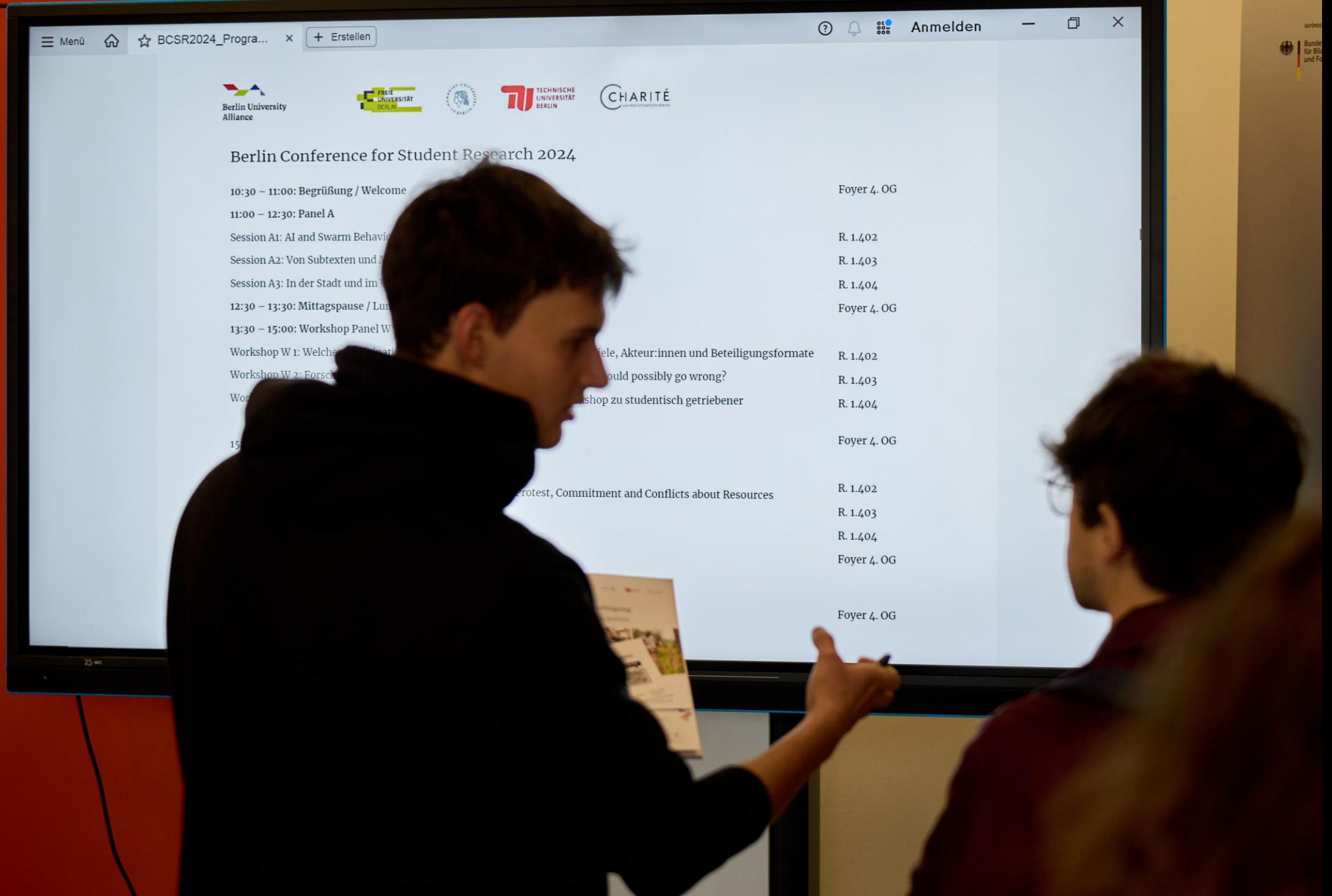
Menü
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Erstellen
Anmelden
Berlin University Alliance
FREIE UNIVERSITÄT BERLIN
TECHNISCHE UNIVERSITÄT BERLIN
CHARITÉ
Berlin Conference for Student Research 2024
10:30 – 11:00: Begrüßung / Welcome
Foyer 4. OG
11:00 – 12:30: Panel A
Session A1: AI and Swarm Behavi
R. 1.402
Session A2: Von Subtexten und
R. 1.403
Session A3: In der Stadt und im
R. 1.404
12:30 – 13:30: Mittagspause / Lu
Foyer 4. OG
13:30 – 15:00: Workshop Panel W
Workshop W 1: Welche
ele, Akteur:innen und Beteiligungsformate
R. 1.402
Workshop W 2: Forsc
ould possibly go wrong?
R. 1.403
Wor
shop zu studentisch getriebener
R. 1.404
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Foyer 4. OG
rotest, Commitment and Conflicts about Resources
R. 1.402
R. 1.403
R. 1.404
Foyer 4. OG
Foyer 4. OG


Berlin Conference
for Student Research
2024
Program
on October 2nd
at Humboldt University in Berlin Mitte
SCAN ME


Research questions
material conditions of short-term, informal flats
and the temporary character of
sub-renters?


Berlin Conference
for Student Research
2024
Felix


Subtexts and Metaphor
1. K-Pop und Versöhnung
2.
WHAT
RIGHT
FOR T
ANTH
POLITICAL ME
Suchen


BEHAVIOR OF A SWARM


Jennifer
sie/she
Orga-Team


Dörk
Starke
Caroline


Julia
she / her


University


University
Julia
she / her
stuROPA-Team


Berlin Conference for
Student Research
Wardrobe


Nebil
he/him


Session AI: AI and Swarm Behavior in Action
NEWS


COMBINING ARTIFICIAL NEURAL NETWORKS WITH AGENT-BASED MODELLING TO INVESTIGATE BUMBLEBEE EXPLORATORY FLIGHTS
INTRODUCTION
METHODS
RESULTS
DISCUSSION
Session A1: AI and Swarm Behavior in Action
NEWS


1. K-Pop und Ve
2. Ontology for
cene
3. „Vermögens
Phase 3 Konzeption ei
Phase 4 Überarbeitung
Einen detaillierten Übe
OSAKA UNIVERSITY
TRIDENTS
FOOT
Julius Gast
89


Berlin Conference
for Student Research
2024


Leon


Role of "music" in the past
tool
Use fo
Neue Deutsche Welle
K-Pop since 1990s
Influence on younger generation (Gen. Z)
"Lee Nak-Yon: Kpop
ambassador for Sk
Trums Presidency
The rise of Korea as
A way to reconciliatio
History- Politics- Peac
Berlin Conference
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2024
Program
on October 2nd
at Humboldt University in Berlin Mitte
SCAN ME


MANISH
YADAV
TU Berlin


Michael Hutzler


Elias


AGENDA
1
STADT ERFORSCHEN
Forschungsfrage
Vorwissen
Forschendes Lerner
2
FORSCHUNG
KOMMUNIZIEREN
Audioguide
Wegweiser
Tanja
NEC


METHODOLOGY
PHASE I:
PHASE II:
PHASE III:
OSAKA UNIVERSITY
TRIDENTS


Veronica

LEBEE EXPLORATORY FLIGHTS

Stanojlovic, Felix Leyendendecker, Keanu Lange, Taha Ilhan

ION

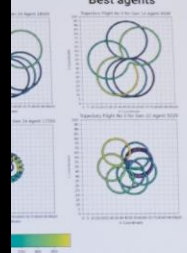
stris involves exploration and exploitation
]. During exploration, bees execute
ations of food sources. Recent
ve shown that these flights are influenced
2, 3].
d end their trips at the nest, resulting in
t curvy trajectories that enlarge with
routes to known food sources,
ms to replicate these exploratory
tificial neural networks, focusing on the
volved.

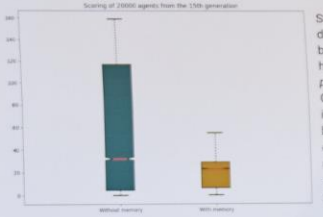
METHODS

- Agent based simulation of 20 000 agents
- Agents have a neural network functioning as its cognitive system
- Simulated evolution across 15 generations
- Random mutations at each generation
- Selection based on two criteria: area explored and ability to return to the hiv

ed significantly higher average exploration scores (M = 60.2, SD = 54.4) compared to the memory cond
was considerably broader in the no-memory condition, with scores ranging from 0 to 159, indicating in
ontrast, the memory condition exhibited a narrower distribution of scores, ranging from 0 to 55.

Best agents





Statistical analysis revealed that the differences in exploration scores between the two conditions were highly significant, $t(21983)=105.78$, $p<.001$. The effect size, calculated as Cohen's d, was large ($d=1.06$), indicating a substantial difference between the two groups. The 95% confidence interval for the difference in means was [40.89, 42.44], further supporting the robustness of these results.

emory does not contribute significantly to an increase in the exploration area when the agents are required to return to
hory explore significantly larger areas, albeit with increased variability in performance compared to those with memory.

N

hory may be critical for resource exploitation and returning to known locations, it may
loratory phases. The results hint at the possibility that exploratory flights rely more on
tic search patterns, rather than on learned spatial information. This contrasts with the
neficial trait in foraging strategies. However, the memory implementation in our model—
st explored area—may not fully capture the complexity of memory usage in real natural
nce of key ecological variables like resource distribution and competition limits the
rch should include these factors and incorporate natural field studies to validate the

ew perspective on the cognitive processes underlying bumblebee foraging, suggesting
t exploration. This opens up important avenues for further research on how memory as a
strategies, with potential implications for pollinator conservation.

Barron, M. C., Lim, K. S., & et al. (2013). The ontogeny of bumble… tories: From naive explorers to experienced foragers. *PLoS One, 8*(10), e78681.

(2023). Modeling bee movement shows how a perce… nce flower discovery. *PLoS Comput Biol 19*(3):e1010558.

hittka L (2016). *Life-Long Radar Tracking of Bu…* 0.1371/journal.pone.0160333


Physical Rerservoir Computer
Cyber-Physical Systems
in Mechanical Engineering TU Berlin
PCA9685 16 Channel 12 Bit PWM
Servo Driver
Raspberry Pi 3


LEGEA
Konstantin
Hauf


ZUM AUDIOGUID


Method
1
Figure 2. (a) Pre-subduction phase with a mixed ice
Enhancing Enceladus Exploration | D. Dia


Current available maps
JPL - NASA
German Aerospace Center DLR map and atlas [7]
Lunar Planetary Institute (LPI) map.
Moscow State University of Geodesy and Cartography (MIIGAiK) map.
US Geological Survey (USGS) map.
Global Enceladus map created using images from Cassini flybys, with Voyager images filling in the gaps in Cassini's coverage.
Equidistant (simple cylindrical) projection; scale: 440 m / pixel at the equator. (Projection used mean radius: 252 km).
Enhancing Enceladus Exploration | V.A. Reinoso Rojas | WS 2023
9
NEC


Group „Gedenkort Messiaskapelle“
im Wintersemester 23/24
2. Besuch der Messiaskapelle +
Gespräch mit Gerlind Lachenicht
3. Recherche zu Vermögens-
erklärungen, Messiaskapelle,
Taufe von als Jüd*innen verfolgte
Christ*innen, einzelnen Personen
Vermögenserklärunge
Brandenburgischen
Landeshauptarchiv (B
5. Veröffentlichung eines
Blogbeitrages auf http
berlin.de/kircheimns/


BACK TO SCHOOL: BEHAVIOR OF A RATIONAL AGENT WITHIN A SWARM
AGENT-BASED MODELLING TO INVESTIGATE BUMBLEBEE EXPLORATORY FLIGHTS
INTRODUCTION
METHODS
RESULTS
DISCUSSION

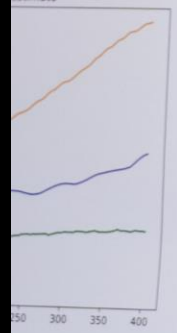
OR OF A
SWARM

eladze

zation

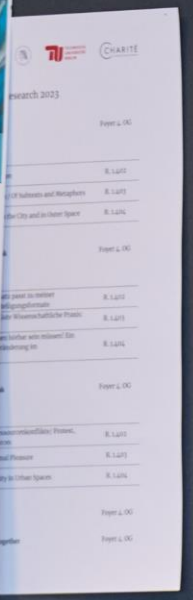
rained and untrained swarm as well
rol. The rapidly rising polarization in
ates that both the individuals in the
re able to align to each other after
e time the trained swarm falls apart
e polarization back to a value close
gs and the untrained swarm.

estimate



aped bounding box. The strong
parison to the much less dense
istance, the trained agents
e the subgroups seperate. This
ave more space than the
warm.

ough neural network based
to future experiments. Even
nts to display swarming
trained agents that exhibit
ctive behaviour. Through
o make our results more



research 2023

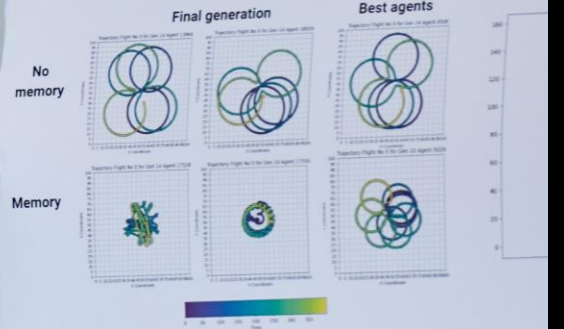
Keanu

INTRODUCTION

Bumblebee foraging behaviour in Bombus terrestris involves exploration and exploitation flights, which are crucial for foraging success [1]. During exploration, bees execute looping flights around their nest to learn the locations of food sources. Recent advancements in harmonic radar technology have shown that these flights are influenced by prior experiences, rather than being random [2, 3].
As central place foragers, bumblebees begin and end their trips at the nest, resulting in distinct flight patterns. Exploratory flights exhibit curvy trajectories that enlarge with experience, while exploitation flights are direct routes to known food sources, maximising foraging efficiency. Our research aims to replicate these exploratory behaviours through agent-based models and artificial neural networks, focusing on the role of memory and the cognitive processes involved.

RESULTS

The condition without memory showed significantly higher average explo
18.5, SD = 12.1). The range of scores was considerably broader in the no-m
variance in exploration behavior. In contrast, the memory condition exhibit



Thus, the simulation indicates that memory does not contribute significantly t
the hive. Instead, agents without memory explore significantly larger areas, al

DISCUSSION

Our findings suggest that while memory may be critical for resource exploita
not be as beneficial during initial exploratory phases. The results hint at the p
heuristic strategies, such as systematic search patterns, rather than on learne
view of memory as a consistently beneficial trait in foraging strategies. Howe
restricted to recalling only the nearest explored area—may not fully capture t
environments. Additionally, the absence of key ecological variables like resou
relevance of our results. Future research should include these factors and inc
findings.

In conclusion, this study provides a new perspective on the cognitive proces
that memory may not always benefit exploration. This opens up important a
cognitive factor influences foraging strategies, with potential implications fo

References

[1] Osborne, J. L., Smith, A., Clark, S. J., Reynolds, D. R., Barron, M. C., Lim, K. S., & et al. (2013). The ontogeny of bu
https://doi.org/10.1371/journal.pone.0078681
[2] Mora´n A, Lihoreau M, Pe´rez-Escudero A, Gautrais J (2023). Modeling bee movement shows how a perceptua
https://doi.org/10.1371/journal.pcbi.1010558
Woodgate JL, Makinson JC, Lim KS, Reynolds AM, Chittka L (2016). Life-Long Radar Tracking of Bumblebee


PHASE II:
Choosing The Right Ontology
Creating Cell-Groups focused on specific theoretical frameworks
Writing text based on collective inputs and findings
PHASE III:
Producing Radio Podcast (Text Recordings and Audio Editing)
TRIDENTS
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Französisch


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