Personal information

Surname(s) / First name(s)	**Zanlungo Francesco**
Address(es)	700-0927, Okayama-ken, Okayama-shi, Nishi Furu Matsu, 2-11-6, Japan
Telephone(s)	(+81) 0774-95-1561, (+81) 080-4018-2731
Email(s)	zanlungo@atr.jp, francesco.zanlungo@gmail.com
Nationality(-ies)	Italian, **Holder of Japanese permanent residence permit**
Date of birth	10/03/1976
Gender	Male

Research keywords

Complex Systems Modelling, Crowd Behaviour, Simulations, Robotics

Professional experience

April 2021- Present	Lecturer Osaka Professional University, Osaka, Japan xxx
April 2021-Present	Researcher Okayama University, Okayama, Japan Monden's Kiban-S
April 2017- Present	Collaborative researcher Intelligent Robotics and Communication Laboratories, ATR, Kyoto, Japan Studying the behaviour of pedestrians and robot-pedestrian interactions
April 2020-March 2021	Specially appointed lecturer Okayama University, Okayama, Japan Kanda's Kiban A
November 2016-March 2017	Researcher Intelligent Robotics and Communication Laboratories, ATR, Kyoto, Japan Studying the behaviour of pedestrians and robot-pedestrian interactions
2015-2016	Lecturer in Applied Mathematics Kingston University, London, UK Faculty of Science, Engineering and Computing, School of Computer Science and Mathematics **Tenured position**, resigned to go back to Japan for family related reasons
2009-2015	Researcher Intelligent Robotics and Communication Laboratories, ATR, Kyoto, Japan Studying the behaviour of pedestrians and robot-pedestrian interactions
November 2008 and September 2009	Visiting researcher CPT (Theoretical Physics Center), Marseilles, France Collaboration with Prof. Sandro Vaienti
2008	Instructor

Milan Polytechnic University

Teaching Introductory course of Mathematics ("College Algebra")

2007-2009	Post-doctoral researcher
	University of Bologna
	Analysis of the effect of random noise and numerical round-off on discrete maps
June-September 2005	Visiting researcher
	Artificial Life Laboratory at Nagoya University
	Collaboration with Prof. Takaya Arita

Journal editing

From August 2018	Area Editor
	Simulation Modelling Practice and Theory, Elsevier

Professional experience outside research

From 2017	Instructor of conversational Italian language
	Japan-Italy Society of Okayama

Education and training

2004-2007	Ph.D. course
Major	Theoretical Physics
Institution	Graduate school of Physics, University of Bologna, Italy
Graduation Thesis	Microscopic Dynamics of Artificial Life Systems, supervised by Prof. Giorgio Turchetti
2003	Japanese language education
Institution	Yamasa Language school, Okazaki-shi, Aichi-ken, Japan
2002	Italian Laurea in Physics
	(The Italian "Laurea" is legally equivalent to a Master degree. To obtain the degree, the candidate was supposed to work on a one year Graduation Thesis project requiring original research.)
Major	Theoretical Physics
Institution	University of Milan, Italy
Graduation Thesis	Studio numerico della cascata ultravioletta nel modello ϕ^4 classico (in Italian), supervised by Prof. Claudio Destri

Languages

Mother tongue(s) | **Italian**

Self-assessment
European level[(*)]

	Understanding			Speaking			Writing	
	Listening		Reading		Spoken interaction		Spoken production		Writing
English	C2	Proficient user	C2	Proficient user	C2	Proficient user	C2	Proficient user	C2	Proficient user
Japanese(**)	C1	Proficient user	C1	Proficient user	C1	Proficient user	C1	Proficient user	C1	Proficient user
Spanish	C2	Proficient user	C2	Proficient user	C1	Proficient user	C1	Proficient user	C1	Proficient user
Portuguese	C1	Proficient user	C1	Proficient user	B2	Independent user	B2	Independent user	B1	Independent user
French	B2	Independent user	C1	Proficient user	B1	Independent user	B1	Independent user	A2	Basic user
Turkish	A1	Basic user	A1	Basic user	A1	Basic user	A1	Basic user	A1	Basic user
Mandarin Chinese	A1	Basic user	A1	Basic user	A1	Basic user	A1	Basic user	A1	Basic user

External funding

2021	Collaborative researcher at Kanda's Kiban-A project
	Granted by the Japan Society for the Promotion of Science
	Budget 2M Japanese Yen
2016	I was, along with two colleagues, part of the Kingston University team that prepared the proposal for the H2020 EU "Monica" project, to which 26 European universities, research centres, industries and public institutions participated. The project has been approved with a budget of 15 million euros, 1 million of them corresponding to the Kingston University unit.

Awards

2016	Awarded a Kingston University Mres studentship (i.e., a fund for a Master student)

Experience in event organisation

2006-2009	In-chief of the organising committee
	The Italian workshop on Biophysics (Biophys'06-09), held annually in Arcidosso, Grosseto, Italy.

Computer skills

C, C++, Fortran, Matlab, Mathematica
MS Office, HTML
Latex

Additional information

Home page	www.irc.atr.jp/~zanlungo/
Driving licence(s)	B (cars)
Personal interests	Foreign languages, swimming, running, cycling, basketball, traveling, music, digital photography, books in general, my family.

Teaching experience

2021-2022 (Ongoing)	Linear algebra, Osaka Professional University
2021-2022 (Ongoing)	Classical mechanics, Okayama University
2016-2017 (Appointed, and prepared lecture notes, before resigning)	Applications of Calculus, Partial Differential Equations module, School of Computer Science and Mathematics, Kingston University
	This undergraduate course introduces the theory of Linear Partial Differential Equations. The course starts with an introduction to the geometrical meaning of vector calculus leading to the expression of the Laplace operator in the principal curvilinear coordinate systems. Then the Heat, Wave, Poisson and Schrödinger equations are introduced, along with separation of variables solutions in Cartesian and spherical coordinates.
Course notes	https://www.dropbox.com/s/ja2arlaweqycn8b/notes_prova.pdf?dl=0
2015-2016	Mathematical and Numerical Methods, Numerical Linear Algebra module, School of Computer Science and Mathematics, Kingston University
	This undergraduate course revises the main theoretical concepts of linear algebra (linear systems, vector space, linear operators, vector and matrix norm, contraction theorem, eigenvalues and eigenvectors, matrix diagonalisation), and introduces numerical algorithms for the solution of related problems (Gaussian Elimination, LU decomposition, iterative methods, eigenvalue power method).

Course notes	https://www.dropbox.com/s/z7d28niwldy734m/notes.pdf?dl=0
2015-2016	**Mathematical Models and Computation, Programming module, School of Computer Science and Mathematics, Kingston University**
	This undergraduate course introduces the fundamental sorting and search algorithms, along with the theoretical concepts necessary for their analysis (algorithm complexity). Part of the course is directed to practical exercitations aimed at acquiring the abilities for performing scientific programming.
2015-2016	**Engineering Mathematics and Computing, School of Civil Engineering, Kingston University**
	This undergraduate course revises the fundamental concepts of applied calculus (up to ordinary differential equations) and teaches how to solve the related problems by Matlab.
2008-2009	**Analytical Mechanics, Instructed by Prof. Turchetti and F. Zanlungo, Dep. of Physics, Bologna University**
	This course was focused on a throughout analysis of Lagrangian Mechanics (Lagrange equations, symmetries, central field, two body problem, stability, small oscillations, rigid body) and a solid introduction to Hamiltonian dynamics (Hamilton equations, canonical transformations, Noether theorem, integrable systems, Liouville theorem, ergodicity). My task on the course was to give part of the theoretical classes.
2008-2009	**Teaching assistant of the Institutions of Mathematics course, Instructed by Prof. Bazzani, Milan Polytechnic University**
	An introductory calculus course, focused in particular on the concepts of real numbers, functions, limits and derivation, along with some notions of linear algebra. My task on the course was to give some theoretical classes in absence of Prof. Bazzani, hold practice sessions and prepare examination tests.
2008	**Introductory course of Mathematics ("College Algebra"), Milan Polytechnic University**
	A course intended for those students that passed the University entry exam but scored poorly in mathematics, focused mainly on the concept of elementary real functions.
2007-2008	**Teaching assistant of the Numerical Methods course, Instructed by Profs. Turchetti and Bazzani, Master course in Physics, Bologna University**
	This course was focused on an introduction of numerical methods for physical sciences (interpolation, numerical solution of non linear equations, numerical integration, numerical solution of differential equations, stochastic systems). My task on the course was to give a few theoretical classes and to assist students during practice sessions.
2007-2008	**Teaching assistant of the Complex Systems Laboratory course, Instructed by Dr. Giorgini, Dep. of Physics, Bologna University**
	For this course, I prepared lectures on genetic algorithms, population dynamics (evolutionary game theory) and neural networks.

Research experience

Crowd dynamics

Mathematical modelling of pedestrian behaviour, crowd dynamics and group behaviour, in collaboration with T. Kanda

In ATR we collected a large amount of data concerning the behaviour of pedestrians in experimental settings and in real world environments, which I used to develop original models of pedestrian and crowd dynamics. More in detail, the major findings regarded:

1. The need to include a velocity dependent potential in a collision avoiding model for pedestrians, and the development of a corresponding mathematical and computational model [6].

2. The tendency of (Japanese) pedestrians to walk on the left side of corridors, and to overtake other pedestrians on the right side, and the development of a method to introduce in a realistic way such a tendency in any pedestrian collision avoidance model [5,19,20].

3. Large pedestrian groups are not stable, and usually break up in more stable 2 or 3 pedestrian sub-units [26].

4. A mathematical model for the behaviour of social pedestrian groups, which was able to correctly predict the shape and velocity of pedestrian groups in low density, large environments [4].

5. Empirical study and mathematical modelling of how crowd density and other environment features affect the behaviour of pedestrian groups [2,3,18].

6. How group composition and social roles affect the behaviour of pedestrian groups, and how this information may be used to automatically recognise groups and their [1,22,24].

7. How gestures affect the behaviour of pedestrian groups [15].

8. How the presence of groups affects crowd dynamics [21]

Human-Robot interaction

Socially acceptable mobile robot navigation, in collaboration with T. Kanda and Z. Yücel

While working at ATR I have been also involved in more engineering oriented works, such as the development of a robot able to smoothly navigate inside a human crowd [16,23,25,30,36,37,40], and the development of algorithms to automatically detect pedestrian walking goals [38] and pedestrian groups [17,31,32,34,35,39].

Discrete chaotic systems

Analysis of the effect of noise on discrete maps, in collaboration with S. Vaienti and G. Turchetti

Development of a method to find a threshold beyond which the numerical results on chaotic maps are not reliable, and analysis of the differences between the effect of random noise and the effect of numerical round-off on the dynamics of the map [7,8,9].

Evolutionary dynamics of agent systems

Microscopic Dynamics of Artificial Life Systems (Ph.D. thesis, sup. G. Turchetti, in collaboration with T. Arita)

Using an approach combining cellular automata or agent models with differential equation (replicator dynamics) models, I studied:

1. The Immune System T cell clonal expansion [12].

2. The relation between the evolution of collision avoidance strategies and the evolution of a *Theory of Mind* [13,27,28].

3. The evolution of "traffic conventions" (such as driving on the left or right side of streets) in a mobility system [10,29].

4. The consequences of the fact that interactions dependent on vision (such as the collision avoidance in crowd dynamics) do not follow the action-reaction law of dynamics [11,33].

Numerical study of statistical properties of relativistic fields

Numerical study of the ultraviolet cascade in ϕ^4 classical model (Master thesis, sup. C. Destri)

Using a numerical algorithm that treats time and space in a symmetrical way, preserving thus the relativistic structure of the field theory, and conserving energy at machine precision, I studied the energy diffusion to the higher (ultraviolet) modes of a relativistic scalar field with a quartic interaction term. The results were compared with a more traditional numerical treatment of hyperbolic partial differential equations.

Publications

Peer reviewed journal papers (or book chapters) of which I was the corresponding author

1   F. Zanlungo, Z. Yücel, and T. Kanda
Intrinsic group behaviour II: On the dependence of triad spatial dynamics on social and personal features; and on the effect of social interaction on small group dynamics
PloS One, Vol 14, No 12, pp e0225704, 2019
10.1371/journal.pone.0225704

2   Z. Yücel, F. Zanlungo, C. Feliciani, Claudio, A. Gregorj, and T. Kanda
Identification of social relation within pedestrian dyads
PloS One, Vol 14, No 10, pp e0223656, 2019
10.1371/journal.pone.0223656

3   39 authors including F. Zanlungo
A Glossary for Research on Human Crowd Dynamics
Collective Dynamics, Vol. 4, pp. 1-13, 2019
10.17815/CD.2019.19

4   Z. Yücel, F. Zanlungo and M. Shiomi
Modeling the impact of interaction on pedestrian group motion
Advanced Robotics, Vol. 32, No 3, pp. 137-147, 2018 **(impact factor 0.92)**
10.1080/01691864.2017.1421481

5   F. Zanlungo, Z. Yücel, D. Brščić, T. Kanda and N. Hagita
Intrinsic group behaviour: dependence of pedestrian dyad dynamics on principal social and personal features
Plos One 0187253, 2017 **(impact factor 3.54)**
10.1371/journal.pone.0187253

6   F. Zanlungo and T. Kanda
A mesoscopic model for the effect of density on pedestrian group dynamics
Europhysics Letters, Vol. 111, No 3, pp. 38007, 2015 **(impact factor 2.095)**
10.1209/0295-5075/111/38007

7   F. Zanlungo, D. Brščić and T. Kanda
Spatial-size scaling of pedestrian groups under growing density conditions
Physical Review E Vol. 91 No 6, pp. 062810, 2015 **(impact factor 2.288)**
10.1103/PhysRevE.91.062810

8   M. Shiomi, F. Zanlungo, K. Hayashi and T. Kanda
Towards a Socially Acceptable Collision Avoidance for a Mobile Robot Navigating Among Pedestrians Using a Pedestrian Model
International Journal of Social Robotics, Vol. 6, No 3, pp 443-455, 2014 **(impact factor 1.207)**
I10.1007/s12369-014-0238-y

9   F. Zanlungo, T. Ikeda and T. Kanda
Potential for the dynamics of pedestrians in a socially interacting group
Physical Review E Vol. 89, No 1, pp. 012811, 2014 **(impact factor 2.288)**
10.1103/PhysRevE.89.012811
(Paper chosen as "editor suggestion", i.e. as being of particular clarity and importance)

10	Z. Yücel, F. Zanlungo, T. Ikeda, T. Miyashita, N. Hagita
	Deciphering the crowd: Modeling and identification of pedestrian group motion
	Sensors, Vol. 13, No. 1, pp. 875-897, 2013 **(impact factor 1.953)**
	10.3390/s130100875

11	F. Zanlungo, T. Ikeda and T. Kanda
	A microscopic social norm model to obtain realistic macroscopic velocity and density pedestrian distributions
	PLoS ONE Vol. 7, No 12, pp. e50720, 2012 **(impact factor 3.73)**
	10.1371/journal.pone.0050720

12	F. Zanlungo, T. Ikeda and T. Kanda
	Social force model with explicit collision prediction
	Europhysics Letters, Vol. 93, No. 6, pp. 68005, 2011 **(impact factor 2.171)**
	10.1209/0295-5075/93/68005

13	G. Turchetti, S. Vaienti and F. Zanlungo
	Asymptotic distribution of global errors in the numerical computations of dynamical systems
	Physica A, Vol. 389, No 21, pp. 4994-5006, 2010 **(impact factor 1.521)**
	10.1016/j.physa.2010.06.060

14	G. Turchetti, S. Vaienti and F. Zanlungo
	Relaxation to the asymptotic distribution of global errors due to round off
	Europhysics Letters, Vol. 89, No 4, pp. 40006, 2010 **(impact factor 2.753)**
	10.1209/0295-5075/89/40006

15	P. Marie, G. Turchetti, S. Vaienti and F. Zanlungo
	Error distribution in randomly perturbed orbits
	Chaos: An Interdisciplinary Journal of Nonlinear Science, Vol. 19, No 4, pp. 043118, 2009 **(impact factor 1.795)**
	10.1063/1.3267510

16	F. Zanlungo, T. Arita, S. Rambaldi
	Emergence of a traffic flow convention in a multiagent model
	Advances in Complex Systems. Vol. 11, No 5, pp. 789-802, 2008
	10.1142/S0219525908001921

17	F. Zanlungo, G. Turchetti, S. Rambaldi
	An Automata Based Microscopic Model Inspired by Clonal Expansion
	Mathematical Modeling of Biological Systems, Volume II. A. Deutsch et al. (eds.), Birkhäuser, Boston, pp. 133-144, 2008
	10.1007/978-0-8176-4556-4_12

18	G. Turchetti, F. Zanlungo, B. Giorgini
	Dynamics and thermodynamics of a gas of automata
	Europhysics Letters, Vol. 78, No 5, pp. 58003, 2007 **(impact factor 2.206)**
	10.1209/0295-5075/78/58003

19	F. Zanlungo
	A collision avoiding mechanism based on a theory of mind
	Advances in Complex Systems. Vol. 10 suppl. No. 2, pp. 363-371, 2007
	10.1142/S0219525907001410

Peer-reviewed conference papers

20 E. Repiso, F. Zanlungo, T. Kanda, A. Garrell, A. Sanfeliu
People's V-Formation and Side-by-Side Model Adapted to Accompany Groups of People by Social Robots
International Conference on Intelligent Robots and Systems 2019, pp. 2082-2088, Macau, China
10.1109/IROS40897.2019.8968601

21 Z. Yücel, F. Zanlungo, T. Kanda
Gender profiling of pedestrian dyads
Traffic and Granular Flow Conference 2019, pp. 299-305, Pamplona, Spain
10.1007/978-3-030-55973-1_37

22 F. Zanlungo, L. Crociani, Z. Yücel, T. Kanda
The effect of social groups on the dynamics of bi-directional pedestrian flow: a numerical study
Traffic and Granular Flow Conference 2019, pp. 307-313, Pamplona, Spain

23 C. Feliciani, F. Zanlungo, K. Nishinari, and T. Kanda
Thermodynamics of a gas of pedestrians: Theory and experiment
Pedestrian and Evacuation Conference 2018, Lund, Sweden
Collective Dynamics, Vol 5, pp. 440-447, 2020
10.17815/CD.2020.97

24 Z. Yücel, F. Zanlungo, C. Feliciani, T. Kanda
Estimating social relation from trajectories
Pedestrian and Evacuation Conference 2018, Lund, Sweden
Collective Dynamics, Vol 5, pp. 222-229, 2020
10.17815/CD.2020.54

25 F. Zanlungo, Z. Yücel, T. Kanda
Social group behaviour of triads. Dependence on purpose and gender
Pedestrian and Evacuation Conference 2018, Lund, Sweden
Collective Dynamics, Vol 5, pp. 118-125, 2020
10.17815/CD.2020.90

26 F. Zanlungo, Z. Yücel, F. Ferreri, J. Even, L.Y. Morales Saiki, T. Kanda
Pedestrian models for robot motion
Pedestrian and Evacuation Conference 2018, Lund, Sweden
Collective Dynamics, Vol 5, pp. 525-527, 2020
10.17815/CD.2020.90

27 Z. Yücel, F. Zanlungo and M. Shiomi
Walk the talk: Gestures in mobile interaction
International Conference on Social Robotics 2017, pp. 220-230, Tsukuba, Japan
10.1007/978-3-319-70022-9_22

28 F. Zanlungo, Z. Yücel, F. Ferreri, J. Even, L.Y. Morales Saiki, T. Kanda
Social group motion in robots
International Conference on Social Robotics 2017, pp. 474-484, Tsukuba, Japan
10.1007/978-3-319-70022-9_47

29 D. Brščić, F. Zanlungo and T. Kanda
Modelling of Pedestrian groups and application to group recognition

40th International Convention on Information Information and Communication Technology, Electronics and Microelectronics (MIPRO), 2017, pp. 564-569, Opatija, Croatia
10.23919/MIPRO.2017.7973489

30   K. Kamei, F. Zanlungo, T. Kanda, Y. Horikawa, T. Miyashita and N. Hagita
Cloud networked robotics for social robotic services extending robotic functional service standards to support autonomous mobility system in social environments
International Conference on Ubiquitous Robots and Ambient Intelligence (URAI), 2017, pp. 897-902, Jeju, South Korea
10.1109/URAI.2017.7992862

31   F. Zanlungo, Z. Yücel and T. Kanda
The effect of social roles on group behaviour
Pedestrian and Evacuation Conference 2016, Hefei, China

32   F. Zanlungo, D. Brščić and T. Kanda
Pedestrian group behaviour analysis under different density conditions
Pedestrian and Evacuation Conference 2014, Delft, Netherlands
Transportation Research Procedia Vol. 2, 149-158, 2014
10.1016/j.trpro.2014.09.020

33   D. Brščić, F. Zanlungo and T. Kanda
Density and velocity patterns during one year of pedestrian tracking
Pedestrian and Evacuation Conference 2014, Delft, Netherlands
Transportation Research Procedia 2, 77-86, 2014

34   F. Zanlungo and T. Kanda
Do walking pedestrians stably interact inside a large group? Analysis of group and sub-group spatial structure
The annual meeting of cognitive science society (CogSci) 2013, Vol. 35, No. 35, pp. 3847-3852, Berlin, Germany

35   T. Ikeda, Y. Chigodo, D. Rea, F. Zanlungo, M. Shiomi and T. Kanda
Modeling and Prediction of Pedestrian Behavior based on the Sub-goal Concept
Robotics: Science and Systems (RSS) 2013, pp. 137-144, Sidney, Australia (acceptance rate 33%)
10.15607/RSS.2012.VIII.018

36   F. Zanlungo, Y. Chigodo, T. Ikeda and T. Kanda
Experimental study and modelling of pedestrian space occupation and motion pattern in a real world environment
Pedestrian and Evacuation Dynamics 2012, Zurich, Switzerland
Weidmann et al. (eds.), pp. 289-304, Springer, (published as a book in 2014)
10.1007/978-3-319-02447-9_24

37   M. Shiomi, F. Zanlungo, K. Hayashi and T. Kanda
A Framework with a Pedestrian Simulator for Deploying Robots into a Real Environment
International Conference on Simulation, Modeling, and Programming for Autonomous Robots 2012 (SIMPAR), pp. 185-196, (acceptance rate 35%)
10.1007/978-3-642-34327-8_19

38   Z. Yücel, F. Zanlungo, T. Ikeda, T. Miyashita, N. Hagita
Modeling Indicators of Coherent Motion
International Conference on Intelligent Robots and Systems (IROS) 2012, pp 2134–2140, Algarve, Portuga (acceptance rate 39%) 2012
10.1109/IROS.2012.6385744

39   M. D. Cooney, F. Zanlungo, S. Nishio, H. Ishiguro
Designing a Flying Humanoid Robot (FHR): Effects of Flight on Interactive Communication
International Symposium on Robot and Human Interactive Communication (IEEE RO-MAN) 2012, pp. 364-371, 2012, Paris, France
10.1109/ROMAN.2012.6343780

40   A. Bazzani, B. Giorgini, F. Zanlungo and S. Rambaldi
Cognitive Dynamics in an automata gas
Artificial Life and Evolutionary Computation, pp. 3-19, Wivace 2008, Venice, Italy
10.1142/9789814287456_0001

41   F. Zanlungo
Evolution of high level recursive thinking in a collision avoiding agent model
Artificial Life and Evolutionary Computation, pp. 155-164, Wivace 2008, Venice, Italy
10.1142/9789814287456_0014

42   F. Zanlungo, A. Bazzani, B. Giorgini, S. Rambaldi, G. Servizi and G. Turchetti
An evolutionary crowd dynamics model
European Conference on Complex Systems 2007, Dresden Germany

43   F. Zanlungo and T. Arita
Evolutionary Simulation of an Agent Based Mobility System Using Indirect Communication
International Symposium of Artificial Life and Robotics (A-Life) 2006, pp. 319-322, Oita, Japan

Other presentations at conferences

44   F. Zanlungo, Z. Yücel, F. Ferreri, J. Even, L.Y. Morales Saiki, T. Kanda
Autonomous vehicles moving as a human group
Poster presentation at IROS 2017

45   F. Zanlungo, G. Turchetti
Dynamics and Thermodynamics of Automata with a visual cone. Comparison with a recursive thinking model
Dynamics and Thermodynamics of Systems with Long Range Interactions: Theory and Experiments, 2007

46   F. Zanlungo, G. Turchetti
An evolutionary collision avoiding model based on the theory of mind
International Conference on the Simulation of adaptive behavior (SAB) 2006, Rome, Italy

47   F. Zanlungo, G. Turchetti
Dynamics and thermodynamics of a gas of automata
Italian Workshop in Artificial Life (WIVA3), 2006

48   G. Turchetti, F. Zanlungo
Termodinamica di un gas di automi (in Italian)
Italian Workshop in Artificial Life (WIVA2), 2005, Rome, Italy

49   G. Turchetti, S. Rambaldi, G. Salustri and F. Zanlungo
Mathematical models of clonal expansion
WSEAS Transactions on Biology and Biomedicine 1, 373-378, 2004

	Invited talks
50	*Pedestrian group behaviour* Alicante University Alicante, Spain, 2019
51	*Pedestrian group behaviour* Polythechnic University of Catalonia Barcelona, Spain, 2019
52	*Pedestrian group behaviour* Symposium on Physics and Psychology of Human Crowd Dynamics Leiden, Netherlands, 2018
53	*Pedestrian group behaviour* Department of Physics of Bologna University Bologna, Italy, 2018
54	*Pedestrian group behaviour* Linnaeus University Växjö, Sweden, 2018
55	*Pedestrian group behaviour* University of Milano Bicocca Milan, Italy, 2017
56	*Pedestrian group behaviour* Tokyo University, Non-linear seminar, Nishinari Laboratory Tokyo, Japan, 2016
57	*Potential for the dynamics of pedestrians in a socially interacting group* Department of Physics of Bologna University Bologna, Italy, 2014
58	*Potential for the dynamics of pedestrians in a socially interacting group* Artificial Life Laboratory of Nagoya University (Arita Lab) Nagoya, Japan, 2014
59	*Experimental study and modelisation of pedestrian space occupation and motion pattern in a real world environment* Department of Physics of Bologna University Bologna, Italy, 2012
60	*Experimental study and modelisation of pedestrian space occupation and motion pattern in a real world environment* Artificial Life Laboratory of Nagoya University (Arita Lab) Nagoya, Japan, 20122
61	*Social force model with explicit collision prediction* Artificial Life Laboratory of Nagoya University (Arita Lab) Nagoya, Japan, 2011
62	*Evolution of Behaviours in Artificial Life* International Summer School: Interfacing Sciences and Humanities

Rimini, Italy, 2009

63 *Chaos and Complexity*
International Summer School: Interfacing Sciences and Humanities
Rimini, Italy, 2009

64 *Error statistics in perturbed discrete dynamical systems*
Department of Mathematics of Bologna University
Bologna, Italy, 2009

65 *Evolutionary techniques in a traffic model*
Nagatani Laboratory of Shizuoka University
Hamamatsu, Japan, 2008

Japanese language papers

66 林宏太郎、塩見昌裕、Francesco ZANLUNGO、神田崇行
歩行者モデルを用いた話しかけやすい移動行動
日本ロボット学会第３２回学術講演会講演論文集RJS2014, 3P2-07, 2014

67 池田徹志、児堂義弘、Daniel REA、Francesco ZANLUNGO、塩見昌裕、神田崇行
街角における歩行者のサブゴール遷移モデル
日本ロボット学会第３1回学術講演会講演論文集RJS2013, 3I2-03, 2013

68 塩見昌裕、Francesco ZANLUNGO、林宏太郎、神田崇行
街角で活動する移動ロボットのための歩行者シミュレータ
日本ロボット学会第30回学術講演会講演論文集RJS2012, 2N1-8, 2012

69 塩見昌裕、Francesco ZANLUNGO、林宏太郎、神田崇行
歩行者モデルを用いた街角でのロボットナビゲーション
日本ロボット学会第30回学術講演会講演論文集RJS2012, 2N1-8, 2012

Patents

Registered patents

ecvitem1 T. Ikeda, F. Zanlungo, T. Miyashita and T. Kanda

System for the prediction of pedestrian motion and robot control

（移動予測装置、ロボット制御装置、移動予測プログラムおよび移動予測方法）
Japanese patent 5763384, registered on 19/6/2015

2 M. Shiomi, T. Kanda, F. Zanlungo and T. Ikeda
A robot able to predict pedestrian motion and perform automatic collision avoidance
（歩行者の軌跡を予測して自己の回避行動を決定するロボット）
Japanese patent 5768273, registered on 3/7/2015