



DAFTAR PUSTAKA

- Alessa, L., & Kliskey, A, 2012. The role of agent types in detecting and responding to environmental change. *Human Organization*, 71(1), 1-10.
- Almeida, J. E., Rossetti, R. J., & Coelho, A. L, 2013, Crowd Simulation Modeling Applied to Emergency and Evacuation Simulations using Multi-Agent Systems. *arXiv preprint arXiv:1303.4692*.
- Almeida, João, E., Rossetti, R.J., dan Coelho A, L., 2013, Crowd Simulation Modeling Applied to Emergency and Evacuation Simulations using Multi-Agent Systems, *arXiv preprint arXiv:1303.4692*.
- Almeida, J.E., Kokkinogenis, Z., dan Rossetti, R., 2012, NetLogo Implementation of an Evacuation Scenario, *Proceeding of 7th Information Systems and Technologies (CISTI)*, pp. 1-4.
- Aman, A.; Bakhtiar, T.; Hanum, F.; Supriyo, P.T., 2012, OR/MS Applications in Mt. Merapi Disaster Management. *J. Math. Stat.* 8, 264–273.
- Andreastuti, S.D.; Alloway, B.V. Smith, I.E.M., 2000. A detailed tephrostratigraphic framework at Merapi Volcano, Central Java, Indonesia: Implications for eruption predictions and hazard assessment. *J. Volcanol. Geotherm. Res.*, 100, 51–67.
- Averill, J., Milet, D., Peacock, R., Kuligowski, E., Groner, N., Proulx, G., Reneke, P., Nelson, H, 2005, Federal Building and Fire Safety Investigation of the World Trade Center Disaster-Occupant Behavior, *Egress and Emergency Communications. US Government Printing Office, Washington. NIST NCSTAR 1-7*.
- Axelrod, R. dan Tesfatsion, L, 2005, *A Guide For Newcomers to Agent-Based Modeling in The Social Sciences*, pada Kenneth L. Judd and Leigh Tesfatsion (eds.), Handbook of Computational Economics, vol. 2, North-Holland.
- Arai, K., Basuki, A., & Harsono, T, 2011, *Cellular Automata for Traffic Modelling and Simulations in a Situation of Evacuation from Disaster Areas*. INTECH Open Access Publisher.
- Assaf, H, 2010, Framework for Modeling Mass Disasters. *Natural Hazards Review*, 12(2), 47-61.



Avolio, M.V., Bozzano, F., Ambrosio, D.D., Gregorio, S.D., Lupiano, V., Mazzanti, P., Ronggo, R., Spataro, W, 2011, Debris Flows Simulation By Cellular Automata Review of the Sciddica Models, *University of Calabria*, Roma, Italy.

Alazawi, Z., Alani, O., Abdjabar, M. B., & Mehmood, R, 2014, Transportation Evacuation Strategies Based on VANET Disaster Management System. *Procedia Economics and Finance*, 18, 352-360.

Banks, J., 1998, *Handbook of Simulation: Principles, Methodology, Advances, Applications, and Practice*, Engineering & Management Press, John Wiley & Sons.

Bonabeau, E., Dorigo, M., Theraulaz, G, 1999, *Swarm Intelligence: From Natural to Artificial Systems*, Oxford University Press. Newyork.

Bonabeau, E, 2002, Agent-based modeling: Methods and techniques for simulating human systems. *Proceedings of the National Academy of Sciences of the United States of America*.

Brady, T.F, 2003, Emergency Management: Capability Analysis of Critical Incident Response, *Proceedings of the 2003 Winter Simulation Conference, U.S.A.*

Bird, D. K., 2009. The use of questionnaires for acquiring information on public perception of natural hazards and risk mitigation-a review of current knowledge and practice. *Natural Hazards and Earth System Sciences*, 9(4), 1307.

BPBD, 2009, *Laporan Akhir Badan Pusat Bencana Daerah, Kabupaten Sleman*, Yogyakarta.

Beckers, E.W.A., Flacke, J., dan Retsios, B, 2010, *Proceeding of First International Conference on Evacuation Modeling and Management*, no. 3, pp. 23-35.

Bandrova, T., Zlatanova, S., Konecny, M, 2012, Three-Dimensional Maps for Disaster Management, ISPRS Annals of the Photogrammetry, *Remote Sensing and Spatial Information Science*, Vol I-4, Australia.

Bachri, S.; Stöetter, J.; Sartohadi, J.; Setiawan, M.A., 2012, Evaluation of volcanic risk management in Merapi and Bromo Volcanoes. In *Proceedings of the EGU General Assembly Conference Abstracts*, Vienna, Austria, 22–27 April 2012; Volume 14, p. 13111.

Bakkour, D.; Enjolras, G.; Kast, R.; Thouret, J., 2017, The adaptive governance of natural disasters: Insights from the 2010 Mount Merapi Eruption in



Indonesia. Available online: <http://www.webcitation.org/6vD8LzkFg> (accessed on 30 Maret 2018).

Burstedde, C., Klauck, K., Schadscheider, A, et.al, 2001, Simulation of Pedestrian Dynamics Using a Two Dimensional Cellular Automaton, *Physica A*, 382 (2001) 507-525.

Bignami, C., Ruch, J., Chini, M., Neri, M., Buongiorno, M.F., Hidayati, S., Sayudi, D.S. Surono, 2013, Pyroclastic density current volume estimation after the 2010 Merapi volcano eruption using X-band SAR. *J. Volcanol. Geotherm. Res.*, 261, 236–243.

Bretschneider, S., & Kimms, A, 2011, A basic mathematical model for evacuation problems in urban areas. *Transportation research part A: policy and practice*, 45(6), 523-539.

Bulleit, W., Drewek, M, 2012, Agent-Based Modelling and Simulation for Hazard Management, *Construction Research Congress, ASCE*.

Borshchev, A., Filippov, A., 2012, From System Dynamics and Discrete Event to Practical Agent Based Modeling: Reasons, Techniques, Tools.

BNPB, 2013, <http://www.bnrb.go.id/news/read/1289/>, [diakses online 12 Februari 2013].

BPS Kabupaten Sleman, 2016, Jumlah dan proporsi penduduk di Kecamatan Cangkringan dan Pakem, <http://sleman.kab.bps.go.id>, [diakses online 14 November 2016].

Center, A. D. R., 2005. The Concept of Total Disaster Risk Management.

Carter, W.N., 2008, *Disaster management: a disaster management handbook*, Asian Development Bank.

Cameron, L., Shah, M, 2015, Risk-taking behavior in the wake of natural disasters. *Journal of Human Resources*, 50(2), 484-515.

Charles, S. T., Reynolds, C. A., & Gatz, M, 2001, Age-related differences and change in positive and negative affect over 23 years. *Journal of personality and social psychology*, 80(1), 136

Castelfranci, C., Falcone, R, 1998, Towards a Theory of Delegation for Agent-based System, *IP-CNR, Rome, Italy*.



Castelfranchi, C., 2001, The Theory of Social Functions: Challenges For Computational Social Science and Multi-Agent Learning, *Journal of Cognitive System Research*, 2 (2001) 5-38, Rome, Italy.

Chen, X., Zhan, F.B, 2008, Agent-based modelling and simulation of urban evacuation: relative effectiveness of simultaneous and staged evacuation strategies, *Journal of Operational Research Society*, 25-33.doi:10.1057/palgrave.jors.2602321.

Christia, M., 2012, *Experiences of People Affected Merapi Eruption in 2010: A Qualitative Study Conducted in Krinjing Village Indonesia*. Master's Thesis, University of Oslo, Oslo, Norway.

Charbonnier, S. Germa, A., Connor, C.; Connor, L., Dixon, T., Komorowski, J.-C., Gertisser, R., Lavigne, F., Preece, K., 2013, The 2010 Pyroclastic Density Currents of Merapi Volcano, Central Java, Indonesia. In Proceedings of the EGU General Assembly Conference Abstracts, Vienna, Austria, 7–12 April 2013; Volume 15, p. 6629.

Coelho, A. L., 1997. Modelação de Evacuação de Edifícios Sujeitos à Ação de um Incêndio. Phd Dissertation, *Lisboa, LNEC*.

Cordeiro, E, 2009, A Influência do Comportamento das Pessoas e suas Limitações na Evacuação dos Edifícios. *LNEC, Lisboa*.

Cordeiro, E., Leca, A., Coelho., Rossetti, R.J.F., Almeida, J, 2011, Human Behavior Under Fire Situations-Portuguese population, *Proceedings Fire and Evacuation Modelling Technical Conference 2011*, Baltimore, Maryland.

Cutter, S.L., 2003, GI Science Disasters and Emergency Management, *Transactions in GIS* 7 (4): 439-445, Blackwell Publishing, USA.

Dawson, R., Peppe, R., Wang, M., 2010, An Agent based model for risk-based incident management, *Newcastle University*, United Kingdom.

Davidnovic, N., Stoimenov, L., 2012, Emdroid: Integrating Volunteered Geographic Information from the emergency scene for better situation awareness during emergency response, *Proceedings of the AGILE Conference on Geographic Information Science*, Avignon, April, 24-27, Serbia.

Davidson, P., Henesey, L., Ramstedt, L., Tornquist, J., Wernstedt, F., 2005, An analysis of agent-based approaches to transport logistics, *Transportation research part C*, 13 (2005) 255-271, Sweden.

Damby, D.E., Horwell, C.J., Baxter, P.J., Delmelle, P., Donaldson, K., Dunster, C., Fubini, B., Murphy, F.A., Nattrass, C., Sweeney, S.; et al. 2013, The



respiratory health hazard of tephra from the 2010 Centennial eruption of Merapi with implications for occupational mining of deposits. *J. Volcanol. Geotherm. Res.*, 261, 376–387.

Desmet, A., Gelenbe, E., 2013, Graph and Analytical Models for Emergency Evacuation, *Future Internet*, 5, 46-5; doi:10.3390/fi5010046.

Darmawan, H., Wibowo, T., Suryanto, W., Setiawan, M., 2014, Modeling of pyroclastic flows to predict pyroclastic hazard zone in Merapi volcano after 2010 eruption. *Proceedings of the EGU General Assembly Conference Abstracts*, Vienna, Austria, 27 April–2 May 2014; Volume 16, p. 1685.

Dewi, R.K., 2014, *Analisis Persepsi Risiko Pada Penduduk Terhadap Bencana Gunung Merapi*, Skripsi, Fakultas Teknik, Universitas Gadjah Mada.

Dewi, R.K., Hartono., B., 2014, Analisis persepsi risiko pada penduduk terhadap bencana erupsi Gunung Merapi, Yogyakarta, *Seminar Nasional Teknik Industri BKSTI*, 7:517.

D’Orazio, M., Spalazzi, L., Quagliarini, E., & Bernardini, G., 2014, Agent-based model for earthquake pedestrians’ evacuation in urban outdoor scenarios: Behavioural patterns definition and evacuation paths choice. *Safety science*, 62, 450-465.

DIBI Provinsi DI Yogyakarta, 2012, Sebaran Kejadian Bencana dan Korban Meninggal Perjenis Kejadian Bencana Wilayah DI. Yogyakarta Tahun 1867 – 2010, <http://dibi.jogjaprov.go.id>, [diakses online 14 November 2012].

Dove, M.R., 2008, Perception of Volcanic Eruption as Agent of Change on Merapi Volcano-Central Java, *Journal of Vulcanology and Geothermal Research*, 172 (2008) 329-337, USA.

Donovan, K., 2010, Cultural Responses to Volcanic Hazards on Mt Merapi, Indonesia; *University of Plymouth:Plymouth, UK*.

Donovan, K., Suryanto, A., Utami, P., 2012, Mapping cultural vulnerability in volcanic regions: The practical application of social volcanology at Mt Merapi, Indonesia. *Environ. Hazards*, 11, 303–323.

Ding, N., Zhang, H., Chena, T., Luh, P.B., 2014, Evacuees’ behaviors of using elevators during evacuation based on experiments, *Transportation Research Procedia* 2, 594 – 602, *The Conference on Pedestrian and Evacuation Dynamics 2014 (PED2014)*, China.



ESDM., 2015. Tingkatan Status gunung Berapi di Indonesia Menurut Badan Geologi Kementerian ESDM <http://esdm.go.id> [online accessed 3 Juni 2015].

ESDM., 2017. Tingkatan Status gunung Berapi di Indonesia Menurut Badan Geologi Kementerian ESDM <http://esdm.go.id> [online accessed 29 september 2017].

Fry, J., Binner, J., 2015, Elementary modelling and behavioural analysis for emergency evacuations using Social Media. *European Journal of Operational Research.*

Goltz, J.D., 1992, Initial Behavioral Response to a Rapid Onset Disaster: a Case Study of The October 1, 1987 Whittier Narrows Earthquake, *International Journal of Mass Emergencies and Disasters*, Vol.10, No.1, pp. 43-69.

Gwynne, S., Galea, E.R., Owen, M., Lawrence, P.J., Filippidis, L., 1999, A Review of the Methodologies Used in Evacuation Modelling, Fire and Materials, *Fire Mater* 23, 383-388, London, UK.

Georgiadou, P. S., Papazoglou, I. A., Kiranoudis, C. T., & Markatos, N. C., 2007, Modeling emergency evacuation for major hazard industrial sites. *Reliability Engineering & System Safety*, 92(10), 1388-1402.

Göbelbecker, M., & Dornhege, C., 2009. Realistic cities in simulated environments- an open street map to robocup rescue converter. In *Fourth International Workshop on Synthetic Simulation and Robotics to Mitigate Earthquake Disaster (SRMED 2009)*.

Guiterez-Milla, A., Borges, F., Suppi, R., Luque, E., 2015, Crowd evacuations SaaS: an ABM approach, *Procedia Computer Science*, ICCS 2015 *International Conference On Computational Science, Volume 51, Pages 473–482*, Spain.

Hart, P. E., Nilsson, N. J., & Raphael, B., 1968. A formal basis for the heuristic determination of minimum cost paths. *IEEE transactions on Systems Science and Cybernetics*, 4(2), 100-107.

Ha, Vi Q., 2012, *Agent-based Modeling of Emergency Building Evacuation*. Master's Theses at the University of Connecticut, U.S.A.

Ha, V., Lykotrafitis, G., 2012, Agent-based modeling of a multi-room multi-floor building emergency evacuation. *Physica A: Statistical Mechanics and its Applications*, 391(8), 2740-2751.



Helbing, D., Varkas, I., Vicsek, T., 2000, Simulating Dynamical Features of Escape panic, *Nature* 407 (2000) 487-490.

Hashemi, M. dan Alesheikh, A. A., 2010, Developing an Agent Based Simulation Model for Earthquakes in the Context of SDI, *Proceeding of Annual World Conference GSDI 12*, pp. 1-9.

Hsu, T. L., Liu, J. W. S., 2012, An Agent-Based Disaster Simulation Environment. In *RITMAN Workshop*.

Horiuchi. S., Sekizawa, A., Morishita, Y., dan Mizuno, Y., 1977, Field Survey of The Izu-hanto-oki Earthquake of 1974, *Study on Human Behavior in the Earthquake*, no. 234, pp. 51-60. 110

Hartono, B., 2010, *Investigating Risky Decisions of Construction Contractors in Competitive Bid Mark-ups*, National University of Singapore.

Hariwijaya, I., 2014, *Analisis Dinamika Evakuasi saat Gempa Bumi dengan Pendekatan Agent-Based Modeling*, Fakultas Teknik, Universitas Gadjah Mada, Thesis.

Handayani, D., Herliansyah, M.K., Hartono, B., Sophya, B.M. Community behavior during the evacuation of Mount Merapi eruption disaster. In *Proceedings of the 2016 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM)*, Bali, Indonesia, 4–7 December 2016; pp. 276–280.

Handayani, D., Sophya, B. M., Hartono, B., & Herliansyah, M. K. (2017). The Behavioural Rules of People During Disaster Emergency Evacuation: A Case Study of Mount Merapi Eruption in Indonesia. *Journal of Engineering and Applied Sciences*, 12(21), 5443-5451.

Iovine, G., Gregorio, S., Lupiano, V., 2003, Debris-flow susceptibility assesment through cellular automata modelling: an example from 15-16 December 1999 disaster Cervinara and San Martino Valle (Campania, southern Italy), *Natural Hazzards and Earth System Science*, Arcavacata di Rende, Italy.

Ilmia, D.G., 2014, *Kajian Perilaku Manusia Saat Bencana dengan Knowledge Engineering*, Skripsi, JTMI, Fakultas Teknik, Universitas Gadjah Mada.

Itoh, H., Takahama, J., 2000, Takahashi, M.; Miyamoto, K. Hazard estimation of the possible pyroclastic flow disasters using numerical simulation related to the 1994 activity at Merapi Volcano. *J. Volcanol. Geotherm. Res.*, 100, 503–516.



- Ismayasti, R., Bakema, M., Sagala, S., 2018, Integrating Disaster Management and Sustainable Development: Finding the Role of NGOs in the Post-Eruption Merapi. 2010. Available online: [http://perpustakaan.bappenas.go.id/lontar/file?file=digital/141678-\[_TOC_-\]Konten%2061-73.pdf](http://perpustakaan.bappenas.go.id/lontar/file?file=digital/141678-[_TOC_-]Konten%2061-73.pdf) (accessed on 30 Maret 2018).
- Jain, V., Noponen, R., & Smith, B. M., 2003. Pediatric surgical emergencies in the setting of a natural disaster: experiences from the 2001 earthquake in Gujarat, India. *Journal of pediatric surgery*, 38(5), 663-667.
- Joseph, L., Smith, P.S.P., 2003, Agent-Based Simulation of Human Movements During Emergency Evacuation of Facilities, *Applied Research Associates*, USA.
- Jogiyanto, H. M., 2008. *Metodologi Penelitian Sistem Informasi*. Yogyakarta: Penerbit Andi.
- Joo, J., Kim, N., Wysk, R. A., Rothrock, L., Son, Y. J., Oh, Y. G., & Lee, S., 2013, Agent-based simulation of affordance-based human behaviors in emergency evacuation. *Simulation Modelling Practice and Theory*, 32, 99-115.
- Jumadi, J., Suharyadi, R., Tuladhar, A.M., 2012, Web-Based Spatial Information System to Support Collaborative Lahars Disaster Management. Indones. *J. Geogr.*, 44, 96–144.
- Jumadi., Carver, S., Quincey, D., 2017, A conceptual design of spatio-temporal agent-based model for volcanic evacuation, *System*, 5, 53.
- Jati, W.R., 2013, Analisis Penanggulangan Bencana Berbasis Perspektif *Cultural Theory*, *Jurnal Penanggulangan Bencana*, Vol.4, No.1, Hal. 1-12.
- Kesbanglinmas, 2011, Laporan akhir: Penyusunan Data Base Kawasan Rawan Bahaya Merapi.
- Kosaka, S., 1996, Inhabitants Responses to An Earthquake in Japan, *Eleventh World Conference on Earthquake Engineering*, ELSEVIER Science.
- Kiyono, J., Mori, N, 2004, Simulation of Emergency Evacuation Behaviour During a Disaster by Use of Elliptic Distinc Elements, *13 World Converence on Earhquake Engineering*, Canada.
- Kagaya, S., Hagiwara, T., Uchida, K., Negishi, A, 2005, An Application of Multi-Agent Simulation for Evacuation in Earthquake Disaster, *Journal of the*



*Eastern Asia Society for Transportation Studies, Vol. 6, pp. 4224-4236,
Japan.*

Kwan, M., Lee, J., 2005, Emergency Response After 9/11: the potential of real-time
3D GIS for quick emergency response in micro-spatial environments,
Computers Environment and Urban Systems 29(2005) 93-113.

Kuligowski, E. D., 2003, *The Evaluation of a performance-based design process
for a Hotel building: The comparison of two egress models* (Doctoral
dissertation).

Kuligowski, E.D. dan Peacock, R.D., 2005, National Institute of Standards and
Technology Technical Note 1471, *U.S. Government Printing Office*
Washington.

Kuligowski, E.D., 2008, Modeling Human Behavior During Building Fires, *NIST
Technical Note 1619*.

Kompas., 2010., Inilah Daftar Korban Meninggal di Merapi. (*accessed on 8 Juli
2018*).

Kusdiantara, R., 2011, *Model Evakuasi Bencana Tsunami Kota Padang*. Bandung:
Skripsi.

Kesbanglinmas., 2011. Laporan penaggulangan bencana erupsi Gunung Merapi
2010.

Kang, J., Jeong, I. J., & Kwun, J. B, 2015, Optimal facility–final exit assignment
algorithm for building complex evacuation. *Computers & Industrial
Engineering*, 85, 169-176.

Lindell, M. K., & Perry, R. W., 1992. *Behavioral foundations of community
emergency planning*. Hemisphere Publishing Corp.

Lindell, M. K., 2008, EMBLEM2: An empirically based large scale evacuation time
estimate model. *Transportation research part A: policy and practice*,
42(1), 140-154.

Lämmel, G., Klüpfel, H., & Nagel, K, 2009, The MATSim network flow model for
traffic simulation adapted to large-scale emergency egress and an
application to the evacuation of the Indonesian city of Padang in case of a
tsunami warning. *Pedestrian behavior*, 245-265.

Lämmel, G., Grether, D., & Nagel, K., 2010, The representation and
implementation of time-dependent inundation in large-scale microscopic



evacuation simulations. *Transportation Research Part C: Emerging Technologies*, 18(1), 84-98.

Lavigne, F., Coster, B.D., Juvin, N., Flohic, F., Gaillard, J.C., Texier, P., Morin, J., Sartohadi, J., 2008. People's Behavior in the Face of Volcanic Hazard: Perspectives from Javanese Communities, Indonesia, *Journal of Volcanology and Geothermal Research* 172, pp.273 – 287.

Law, M.A., Kelton, D.W., 1991, *Simulation Modeling and Analysis*, Second Edition, McGraw Hill, Inc., New York.

Li, H., 1987, Preliminary Analysis on the Highest Rate of Casualty in Earthquake Disaster, *Journal of Catastrophology*, no. 2, vol: 41-47. 111

Lieberman, C., Kurowski, D., Avila, M., Ricci, L., Thomas, N., Collyer C., Aguirre, B., 2005, Conceptual Framework for Simulating The Pedestrian Evacuation Behavior From Buildings, *paper 05-2297, Transportation Research Board Annual Meeting*, Washington Dc.

Liao, Y. J., Liao, G. X., & Lo, S. M., 2014, Influencing factor analysis of ultra-tall building elevator evacuation. *Procedia engineering*, 71, 583-590.

Macal, C. M., dan North, M. J., 2006, Introduction to Agent-Based Modeling and Simulation, *MCS LANS Informal Seminar 2006*.

Muhdi, R. A., 2006. Evacuation modeling: Development, characteristics, and limitations. *Proceedings of the IEEE CEC, Vancouver, BC, Canada*, 87-92.

Macal, C.M. dan North, M.J., 2011, Introductory Tutorial: Agent-Based Modeling and Simulation, *Proceedings of the 2011 Winter Simulation Conference, Argonne*, pp. 1451-1464

Mahmood, A.K., Rahman, A. dan Schneider, E., 2008, Using agent-based simulation of human behavior to reduce evacuation time. In *Proceedings of the 11th Pacific Rim International Conference on Multi-Agents: Intelligent Agents and Multi-Agent Systems*, pages 357–369. Springer-Verlag,

Manley, M.T..2012, *Exodus: An Agent-Based Evacuation Simulation Model For Heterogeneous Populations*, PhD Theses, Utah State University.

Manley, M., & Kim, Y. S., 2012, Modeling emergency evacuation of individuals with disabilities (exodus): An agent-based public decision support system. *Expert Systems with Applications*, 39(9), 8300-8311.



Mas, E., Suppasri, A., Imamura, F., Koshimura, S., 2011, Agent-based Simulation of the 2012 Great East Japan Earthquake/Tsunami Evacuation: An Integrated Model of Tsunami Inundation and Evacuation, *Journal of Natural Disaster Science*, Vol. 34, No 1, pp 41-57, Japan.

Madireddy, M., Medeiros, D.J., Kumara, S., 2011, An Agent Based Model for Evacuation Traffic Management, *Proceedings of the 2011 Winter Simulation Conference*, USA.

Mei, E.T.W., Lavigne, F., Picquot, A., Grancher, D., 2011, Crisis Management During the 2010 Eruption of Merapi Volcano. In *Proceedings of the Regional Geographic Conference*—International Geographical Union, Santiago, Chile; pp. 15–19.

Mei, E.T.W., Lavigne, F., 2012, Influence of the institutional and socio-economic context for responding to disasters Case study of the 1994 and 2006 eruptions of the Merapi Volcano, Indonesia. *Geol. Soc. Lond. Spec. Publ.* 361, 171–186.

Mei, E.T.W., Lavigne, F., Picquot, A., de Bélizal, E., Brunstein, D., Grancher, D., Sartohadi, J., Cholik, N., Vidal, C., 2013, Lessons learned from the 2010 evacuations at Merapi volcano. *J. Volcanol. Geotherm. Res.* 261, 348–365.

Mei, E.T.W., Lavigne, F., 2013, Mass evacuation of the 2010 Merapi eruption. *Int. J. Emerg. Manag.*, 9, 298–311.

Mileti, D. S., dan Nigg, J., 1986, Reducing Earthquake Hazards: Lesson Learned from Earthquake, *7 Social Science no. 86-02*.

Murakami, H.O., dan Durkin, M.E., 1988, Studies of Occupant Behavior in Earthquake Engineering, *Proceedings of Ninth World Conference on Earthquake Engineering*, vol. VIII, pp. VII-681-VII-686.

Murray-Tuite, P., & Wolshon, B., 2013, Evacuation transportation modeling: An overview of research, development, and practice. *Transportation Research Part C: Emerging Technologies*, 27, 25-45.

Miyamoto, K., Gonda, Y., Yamashita, S., Matsuyoshi, H., 2017, Hazard estimation of the possible pyroclastic flow disasters using numerical simulation related to the 2010 activity at Merapi Volcano, Indonesia. Available online: https://presentations.copernicus.org/EGU2011-12984_presentation.pdf (accessed on 24 November 2017).

Morin, J., Lavigne, F., Bachelery, P., Finizola, A., Villeneuve, N., 2009, Institutional and social responses to hazards related to Karthala Volcano,



- Comoros. Shima, *The international journal of research into Island cultures*, 3(1).
- Mustapha, K., McHeick, H., & Mellouli, S., 2013, Modeling and simulation agent-based of natural disaster complex systems. *Procedia Computer Science*, 21, 148-155.
- Mishima, N., Miyamoto, N., Taguchi, Y., & Kitagawa, K., 2014, Analysis of current two-way evacuation routes based on residents' perceptions in a historic preservation area. *International journal of disaster risk reduction*, 8, 10-19.
- Madireddy, M., Kumara, S., Medeiros, D. J., & Shankar, V. N. 2015. Leveraging social networks for efficient hurricane evacuation. *Transportation Research Part B: Methodological*, 77, 199-212.
- Neumayer, E., & Plümper, T. 2007. The gendered nature of natural disasters: The impact of catastrophic events on the gender gap in life expectancy, 1981–2002. *Annals of the Association of American Geographers*, 97(3), 551-566.
- North, M.J., dan Macal, C.M. 2011. Introductory Tutorial: Agent-Based Modeling and Simulation, *Proceedings of the 2011 Winter Simulation Conference*, Argonne, USA.
- North, M.J., dan Macal, C.M. 2007. Managing Business Complexity: Discovering Strategic Solution with Agent-Based Modelling and Simulation, *Oxford University Press*, New York, USA.
- Nguyen, M. H., Ho, T. V., & Zucker, J. D. 2013. Integration of Smoke Effect and Blind Evacuation Strategy (SEBES) within fire evacuation simulation *Simulation Modelling Practice and Theory*, 36, 44-59.
- Ohta, Y., dan Omote, S. 1977. An Investigation Into Human Psychology and Behavior During an Earthquake, *Proceeding of the 6th WCEE*, vol. 1, pp. 702-708.
- Ollsson, P.A., Regan, M.A. 2001. A Comparison between actual and predicted evacuation times, *Safety Science*, 38 (2001) 139-145, Pergamon, New Zealand.
- Osman, M. S., & Ram, B. 2013. Two-phase evacuation route planning approach using combined path networks for buildings and roads. *Computers & Industrial Engineering*, 65(2), 233-245.



- Onorati, T., Malizia, A., Diaz, P., & Aedo, I. 2014. Modeling an ontology on accessible evacuation routes for emergencies. *Expert Systems with Applications*, 41(16), 7124-7134.
- Perry, R. W., 1979. Evacuation decision-making in natural disasters. *Mass emergencies*, 4(1), 25-38.
- Perry, R. W., 1979. Incentives for evacuation in natural disaster research based community emergency planning. *Journal of the American Planning Association*, 45(4), 440-447.
- Proulx, G. 2001. Occupant behavior and evacuation, *International Fire Protection Symposium*, pp. 219-232, Munich.
- Pelechano, N., dan Badler, N.I. 2006. Modeling Crowd and Trained Leader Behavior During Building Evacuation, *Departmental Papers (CIS)*, no. 272.
- Pan, X. 2006. *Dissertation Computational Modeling of Human and Social Behaviors for Emergency Egress Analysis*, Standford University.
- Pan, X., Han, C.S., Dauber, K., Law, K.H. 2007. A multi-agent based framework for the simulation of human and social behaviors during emergency evacuations, *AI&Soc (2007) 22:113-132*, Springer, London.
- Pan, X. 2012. A Study on Resident's Risk Perception in Abrupt Geological Hazard, *Journal of Risk Analysis and Crisis Response*, Vol.2, No.1, 44-55, Wenzhou, China
- Putra, T.Y.D.; Trias, A., de Vries, W. A., 2011, Local Spatial Data Infrastructure to Support the Merapi Volcanic Risk Management: A Case Study at Sleman Regency, Indonesia. *J. Geogr.*, 43, 25–48.
- Qingge, Can, G. 2007. Simulating Crowd Evacuation With Leader-Follower Model, *IJCSES International Journal of Computer Sciences and Engineering Systems*, Vol.1, No.4.
- Rahimi, M. 1992. Classification and Analysis of Occupant Behavior During Earhquake Shaking, *Eartquake Engineering tenth world conference*, Balkema, Rotterdam.
- Russel, S.J., Norvig, P. 1995. *Artificial Intelligence A Modern Approach*, Prentice Hall, Upper saddle river, New Jersey.
- Railsback, S.F. dan Grimm, V. 2012. *Agent-Based and Individual-Based Modeling A Practical Modeling*, Princeton University Press, New Jersey.



Rahman, N.V. 2004. Kebakaran, Bahaya Unpredictable, Upaya Dan Kendala Penanggulangannya, dilihat 28 November 2012, *e-USU Repository ©2004 Universitas Sumatera Utara.*

Ratdomopurbo, A., Poupinet, G., 2000, An overview of the seismicity of Merapi volcano (Java, Indonesia), 1983–1994. *J. Volcanol. Geotherm. Res.*, 100, 193–214.

Ritcher, K., Shi, M., Gan, H., Winter, S. 2013. Decentralized evacuation management, *Transportation Research Part C* 31 (2013) 1–17, ELSEVIER, Australia.

Sorensen, J.H., Vogt, B.M., dan Milet, D.S. 1989. Evacuation: An Assessment of Planning and Research, *Oak Ridge National Laboratory Report ORNL-6376, pp. 1-14.*

Sorensen, J.H. 1991. When Shall We Leave? Factors Affecting the Timing of Evacuation Departures, *International Journal of Mass Emergencies and Disasters, vol. 9, no. 22, pp. 153-165.*

Sorensen J.H., Sorensen B.V. 2007. Community Processes: Warning and Evacuation. In: *Handbook of Disaster Research. Handbooks of Sociology and Social Research*. Springer, New York, NY.

Sekizawa, A., Ebihara, M., Notake, H., Kubota, K., Nakano, M., Ohmiya, Y., Kaneko, H. 1999. Occupants' Behavior in Response to the high-rise Appartements Fire in Horoshima City, Fire and material, *Fire Mater 23 297-303 (1999), Tokyo, Japan.*

Sterman, J.D. 2000. *Business Dynamics: System Thinking and Modelling for a Complex World*, Irwin McGraw-Hill.

Shen, T.S., Chien, S.W. 2005. An Evacuation Simulation Model (ESM) For Building Evaluation, *International Jornal on Architectural Science, Vol. 6 No. 1, p 15-30, Taiwan.*

Sagala, S., Okada, N., 2009, F-2 Statistical analysis of correlation between hazard-related factors and households' evacuation decisions in Mt. Merapi. *Proc. Annu. Conf. Inst. Soc. Saf. Sci.*, AA12381938, 61–64.

Sargent, R.G., 2013, Verification and Validation of Simulation Models, *Journal of Simulation*, 7, 12-24.

Shahabi, K., & Wilson, J. P. 2014. CASPER: Intelligent capacity-aware evacuation routing. *Computers, Environment and Urban Systems*, 46, 12-24.



- Shen, Y., Wang, Q., Yan, W., & Sun, J. 2015. An evacuation model coupling with toxic effect for chemical industrial park. *Journal of Loss Prevention in the Process Industries*, 33, 258-265.
- Saikhu, A., Lianto, Buliali, J.L., Swastyastu, C.A. 2009. Simulasi Evakuasi Keadaan Darurat Studi Kasus Apartemen XYZ Surabaya, *Seminar Nasional Aplikasi Teknologi Informasi 2009 (SNATI 2009)*, Yogyakarta.
- Shih, N.J., Lin, C.Y., Yang, C.H. 2000. A virtual-reality based feasibility study of evacuation time compared to the traditional calculation method, *Fire Safety Journal*, 34 (2000) 377-391, Elsevier, Taiwan, China.
- Sofyan, N., Meifani, dan Agus, I.G. 2006. Minimasi Waktu Pengerjaan Produk Melanie Sleigh Changing Table Melalui Pendekatan Simulasi Dan Tabu Search, *Jurnal Teknik Industri*, vol. 8, no. 2, pp. 141-147.
- Sagun, A., Bouchalghem, D., Anumba, C.J. 2011. Computer Simulations vs. Building Guidance to Enhance Evacuation Performance of Building During Emergency Events, *Simulation Modeling Practice and Theory* 19 (2011) 1007-1019. ELSEVIER, UK.
- Saputra, R.W., Munadi, K., Nurdin, Y. 2012. Pengembangan Aplikasi Untuk Simulasi Evakuasi Bencana Tsunami Berbasis Agent-Based Modeling. *Jurnal Online Teknik Elektro*, vol.1, no.1.
- Smith, E.R., dan Conrey, F.R. 2007. Agent-Based Modeling: A New Approach for Theory Building in Social Psychology. *Personality and Social Psychology Review*.
- Schneider, D.J.; Pallister, J.S.; Griswold, J., 2011, Wessels, R.L. Use of satellite remote sensing to support crisis response to the 2010 eruption of Merapi Volcano, Indonesia. *AGU Fall Meet. Abstr.*, 52, 02.
- Setijadji, L.D., 2011, Towards an Effective Decision Support System for Merapi Volcano (Yogyakarta Region, Indonesia). *Proceedings of the AGU Fall Meeting Abstracts, American Geophysical Union*, San Francisco, CA, USA, Volume 1, p. 1271.
- Spence, R. J. S., Kelman, I., Calogero, E., Toyos, G., Baxter, P. J., & Komorowski, J. C. 2005. Modelling expected physical impacts and human casualties from explosive volcanic eruptions. *Natural Hazards and Earth System Science*, 5(6), 1003-1015.



- Sharshar, P., rdianti, J., Gonzalez, J. 2013. Modeling Panic in Ship Fire Evacuation Using Dynamic Bayesian network, *The Third International Conference on Innovative Computing Technology, INTECH pp. 301-307.*
- Shong, Y., Gong , J., Li, Y., Cui, T., Fang, L., Cao, W. 2013. Crowd evacuation simulation for bioterrorism in micro-spatial environments based on virtual geographic environments, *Safety Science 53 (2013) 105–113*, China.
- Shi, C., Zhong, M., Nong, X., He, L., Shi, J., & Feng, G. 2012. Modeling and safety strategy of passenger evacuation in a metro station in China. *Safety Science, 50(5), 1319-1332.*
- Surono, S., Jousset, P., Pallister, J., 2011, Crisis Management during the centennial 2010 eruption at Merapi volcano, Central Java, Indonesia. *Proceedings of the 2011 International Union of Geodesy and Geophysics (IUGG) General Assembly*, Melbourne, Australia, 28 June–7 July 2011.
- Sugiyono., 2012, *Metode penelitian kombinasi*. Alfabeta, Bandung.
- Sudarsana, I.W., Mendi, S., Abdullah, A., Hendra, A., Saharo, A., 2013, Model Matematika untuk sistem Evakuasi Tsunami Kota Palu (SET-KP) Berbasis Jalur Terpendek dan Waktu Evakuasi Minimum, *Online journal of natural science*, Vol 2(3): 39-53.
- Triyoga, L.S., 1991. *Manusia jawa dan Gunung Merapi: persepsi dan sistem kepercayaannya*. Gadjah Mada University Press.
- Taylor, H., 1999. *Modelling Paper Material Flows and Recycling in the US Macro Economy*, PhD Thesis, Departement of Civil Engineering, MIT, Cambridge
- Tissera, P.C., Printista, M., Errecalde, M.L. 2007. Evacuation Simulation Using Cellular Automata, *JCS&T Vol.7 No.1*, San Luis, Argentina.
- Tobin, G.A. 2002., Community Resilience and Volcano Hazard: The Eruption of Tungurahua and Evacuation of the Faldas, *Ecuador Disaster 26 (1)*, 28-48.
- Tan, L., Hu, M., Lin, H., 2015. Agent-based simulation of building evacuation: Combining human behavior with predictable spatial accessibility in a fire emergency. *Information Sciences, 295*, 53-66.
- Thouret, J. C., Lavigne, F., Kelfoun, K., dan Bronto, S., 2000. Toward a revised hazard assessment at Merapi volcano, Central Java. *Journal of Volcanology and Geothermal Research, 100(1-4)*, 479-502.



- Thouret, J. C., Gupta, A., Lube, G., Liew, S. C., & Cronin, S. J., 2010. The 2006 pyroclastic deposits of Merapi Volcano, Java, Indonesia: High-spatial resolution IKONOS images and complementary ground based observations. *Remote Sensing of Environment*, 114(9), 1949-1967.
- Utami, P., 2008, *Measuring Social Vulnerability in Volcanic Hazards: The Case Study of Merapi Volcano, Indonesia, Earth Sciences*. Master's Thesis, University of Bristol, Bristol, UK.
- Uno, K., & Kashiyama, K., 2008. Development of simulation system for the disaster evacuation based on multi-agent model using GIS. *Tsinghua Science & Technology*, 13, 348-353.
- Upadhyay, P., Poudel, A., 2012, Earthquake Risk Perception among Citizens in Kathmandu, Australian *Journal Of Disaster and Trauma Studies*, Vol 2012-1. Japan.
- Voight, B., Young, K.D., Hidayat, D., Purbawinata, M.A., Ratdomopurbo, A., Sayudi, D.S., LaHusen, R., Marso, J., Murray, T.L., Dejean, M., 2000, Deformation and seismic precursors to dome-collapse and fountain-collapse nuées ardentes at Merapi Volcano, Java, Indonesia, 1994–1998. *J. Volcanol. Geotherm. Res.*, 100, 261–287.
- Voight, B., Constantine, E.K., Sisowidjoyo., Torled, R., 2010. Historical Eruptions of Merapi Volcano Central Java Indonesia 1768-1998, *Jurnal of Volcanology and Geothermal Research*, Vol. 100 Issues 1-4 Pages 69-138, USA.
- Vani K., Indicula, S.M. 2013. Agent Based Evacuation Simulation Using Leader-Follower Model, *International Journal of Scientific & Engineering Research*, Volume 4, Issue 8, IJSER©2013, India.
- Voloshin D.V., Puzyrevaa, K.A., Karbovskiiia, V.A., 2014. Agent-based Virtual Society Polygon for Simulation and Evaluation in Massive Mobile Services, *International Conference on Future Information Engineering, IERI Procedia*, 10 (2014) 231 – 238, Rusia.
- Varas, A., Cornejo, M.D., Mainemer, D., Toledo, B., Rogan, J., Munoz, V., Valdivia, J.A., 2007. Cellular automaton model for evacuation process with obstacles, *PHYSICA A*, 382 631-642, Chile.
- Von Sivers, I., Templeton, A., Köster, G., Drury, J., Philippides, A., 2014. Humans do not always act selfishly: social identity and helping in emergency evacuation simulation. *Transportation Research Procedia*, 2, 585-593.



- Wilson, M., 1993. Knowledge engineering. Proceedings of 20th Czech-slovak Conference on computer science (SOFSEM '93). Hrdonov, Sumava, Czech Republic: Czech Society for computer science.
- Wu, S., Shuman, L., Bidanda, B., Kelley, M., Sochats, K., Balaban, C., 2008. Agent-Based Discrete Event Simulation Modelling for disaster Responses, *Proceedings of the 2008 Industrial Engineering Research Conference*, USA.
- Wang, J., Zhang, L., Shi, Q., Yang, P., Hu, X., 2015. Modeling and simulating for congestion pedestrian evacuation with panic. *Physica A: Statistical Mechanics and its Applications*, 428, 396-409. ELSEVIER, China.
- Wang, W. L., Liu, S. B., Lo, S. M., Gao, L. J., 2014. Passenger ship evacuation simulation and validation by experimental data sets. *Procedia engineering*, 71, 427-432.
- WCPT, 2013, <http://www.wcpt.org>, [online accessed 12 Februari 2013].
- World Disaster Report., 2013. *International Federation of Red Cross and Red Crescent Societies*, Geneva, Switzerland.
- Wagner, N., Agrawal, V., 2014. An agent-based simulation system for concert venue crowd evacuation modeling in the presence of a fire disaster. *Expert Systems with Applications*, 41(6), 2807-2815.
- Wolshon, B., Zhang, Z., Parr, S., Mitchell, B., Pardue, J. 2015. Agent-based Modeling for Evacuation Traffic Analysis in Megaregion Road Networks. *Procedia Computer Science*, 52, 908-913.
- Yun, N.Y., Hamada, M., 2012. Evacuation Behaviors in the 2011 Great East Japan Earthquake, *Jurnal of Disaster Research*, vol.7 No.sp, Japan.
- Yamamoto, F., 2012. Modeling and Simulation on Crowd Evacuation of a Building with Agent-Based Approach, *IADIS International Conference on Internet Technology & Society 2012*, pp: 313-315.
- Yang, S., Gao, H., Liu, L., He, L., Fan, C., dan Tang, W., 2010. Analysis on Public Earthquake Risk Perception Based on Questionnaire, *3rd International Conference on Cartography and GIS*, pp. 1-10.
- Yu, L., Duan, C. 2011. Evacuation modelling: An agent based approach. 2nd International Conference on Artificial Intelligence, *Management Science and Electronic Commerce (AIMSEC) IEEE*, pp. 7080-7083.



Yin, W., Murray-Tuite, P., Ukkusuri, S. V., Gladwin, H. 2014. An agent-based modeling system for travel demand simulation for hurricane evacuation. *Transportation research part C: emerging technologies* 42, 44-59.

Yulianto, F., 2014. *Analisis Risiko Aliran Piroklastik Gunung Api Merapi Pasca Erupsi 2010 Menggunakan Data Penginderaan Jauh dan Sistem Informasi Geografis*, Master Thesis, Program studi Mitigasi Bencana Kerusakan Lahan, Sekolah Pasca Sarjana, Institut Pertanian Bogor.

Zerger, A., Smith, D.I. 2003. Impediments to using GIS for real-time disaster decision support, *Computers Environment and Urban System*, 27 123-141, Pergamon, Australia.

Zlatanova, S., VanOosterom, P., Verbree, E. 2005. 3D Technology for Improving Disaster management: Geo-DBMS and Positioning, *Delft University of Technology*, Delft, Netherlands.

Zlatanova, S., Holweg, D., & Stratakis, M., 2007. Framework for multi-risk emergency response. *Advances in Mobile Mapping Technology*, Taylor&Francis, London, ISPRS Book Series, 159-171.

Zhou, S., Chen, D., Cai, W., Luo, L., Yoke, M., Low, H., dan Tian, F. 2010. Crowd Modeling and Simulation Technologies, *ACM Transactions on Modeling and Computer Simulation*, vol. 20, no. 4, pp. 20:1-20:35. 114

Zhang, N., Huang, H., Su, B., Zhao, J. 2015. Analysis of Dynamic Road Risk for Pedestrian Evacuation, *Physica A 430 (2015) 171–183, China*.