

# CURRICULUM VITAE

CÉSAR ALEXANDRE DOMINGUES TEIXEIRA

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## PERSONAL DATA

**Place and date of Birth:** Faro, Portugal, 28<sup>th</sup> of March, 1980

**Nationality:** Portuguese

**Professional Address:** Centre for Intelligent Systems, Faculty of Sciences and Technology, Campus de Gambelas, University of Algarve  
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## ACADEMIC DEGREES

9/1998 to 9/2003 'Licenciatura' (a five-years first degree course) in  
Computation and Systems Engineering by University of  
Algarve, Portugal, with the mark of 17 (out of 20)

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## ACTUAL AND PREVIOUS SCIENTIFIC ACTIVITIES

9/2001 to 10/2003 Undergraduate research grant, with financial support of  
Fundação para a Ciência e a Tecnologia at Centre for  
Intelligent Systems, University of Algarve, Portugal

1/2004 to 12/2007 PhD student with financial support of Fundação para a  
Ciência e a Tecnologia (scholarship  
SFRH/BD/14061/2003) at Centre for Intelligent Systems,  
University of Algarve, Portugal

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## CURRENT RESEARCH INTERESTS

At the moment it is interested in the application of soft-computing techniques (neural networks, genetic algorithms, fuzzy sets, etc.) for non-invasive temperature estimation in the time and space, which is the main topic of their PhD thesis. He is also interested in the development of efficient open-source solutions for ultrasonic and temperature data acquisition.

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#### PUBLICATION IN INTERNATIONAL JOURNALS WITH REFEREES

1. A. E. Ruano, P. J. Fleming, J. C. Lopes, C. Teixeira, K. Rodríguez-Vásquez, and C. M. Fonseca, “Nonlinear identification of aircraft gas-turbine dynamics”, *Neurocomputing*, vol. 55, no. 3-4, pp. 551–579, 2002.
2. C. A. Teixeira, G. Cortela, H. Gomez, M. G. Ruano, A. E. Ruano, C. Negreira, and W. C. A. Pereira, “Temperature models of a homogeneous medium under therapeutic ultrasound”, *Brazilian Journal of Biomedical Engineering*, vol. 20, no. 2-3, pp. 97–101, 2004.
3. C. A. Teixeira, A. E. Ruano, M. G. Ruano, W. C. A. Pereira, and C. Negreira, “Non-invasive temperature prediction of in-vitro therapeutic ultrasound signals using neural networks”, *Medical and Biological Engineering and Computing*, vol. 44, no. 1-2, pp. 111–116, 2006.
4. C. A. Teixeira, M. Graça Ruano, W. C. A. Pereira, A. E. Ruano, and C. Negreira, “Linear versus non-linear non-invasive temperature predictors in a homogeneous medium subjected to physiotherapeutic ultrasound”, *Brazilian Journal of Biomedical Engineering*, 2007(*in-press*).
5. C. A. Teixeira, M. Graça Ruano, A. E. Ruano, and W. C. A. Pereira, “A soft-computing methodology for non-invasive time-spatial temperature estimation”, *IEEE Transactions on Biomedical Engineering*, 2007 (*in-press*).
6. C. A. Teixeira, A. E. Ruano, M. Graça Ruano, and W. C. A. Pereira, “Generalization assessment of non-invasive data-driven temperature estimators from therapeutic ultrasound”, *Brazilian Journal of Biomedical Engineering*, 2007 (*submitted*).
7. C. A. Teixeira, M. Graça Ruano, A. E. Ruano, and W. C. A. Pereira, “Neuro-genetic non-invasive temperature estimation: intensity and spatial prediction”, *Artificial Intelligence in Medicine*, 2007 (*submitted*).

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#### PUBLICATION IN CONFERENCE PROCEEDINGS

1. C. Teixeira, M. G. Ruano, and A. E. Ruano, “Emboli classification using rbf neural networks”, in *Proc. Sixth Portuguese Conference on Automatic Control (Controlo 2004)*, A. E. Ruano, Eds., Faro, Portugal, June 2004, pp. 630–635.
2. C. Teixeira and A. E. Ruano, “Temperature, pH, and Conductivity Control of the Nutrient Solution of an Hydroponic Greenhouse”, in *Proc. Sixth Portuguese Conference on Automatic Control (Controlo 2004)*, A. E. Ruano, Eds., Faro, Portugal, June 2004, p. 518.
3. C. A. Teixeira, G. Cortela, H. Gomez, M. G. Ruano, A. E. Ruano, C. Negreira, and W. C. A. Pereira, “Modelos de temperatura de um meio homogéneo sob ultrassom de terapia”, in *IFMBE Proceedings Series (III Latin-American Congress on Biomedical Engineering)*, J. Nadal, L. V. Batista and J. J. A. Ferreira, Eds., João Pessoa, Paraíba, Brasil, September 2004, vol. 5, In CD-Rom.

4. C. A. Teixeira, W. C. A. Pereira, A. E. Ruano, and M. Graça Ruano, “Multi-objective genetic algorithm applied to the structure selection of rbfnn temperature estimators”, in *proc. 7th International Conference on Adaptive and Natural Computing Algorithms (ICANNGA’05)*, B. Ribeiro, R. F. Albrecht, A. Dobnikar, D. W. Pearson and N. C. Steele, Eds., Coimbra, Portugal, March 2005, pp. 506–509.
5. C. A. Teixeira, M. Graça Ruano, W. C. A. Pereira, and A. E. Ruano, “Temperature modelling of an homogeneous medium using genetically selected rbf(lic)”, in *proc. of the 16th IFAC World Congress*, P. Piztek, Eds., Prague, Czech Republic, July 2005, Elsevier.
6. C. A. Teixeira, W. C. A. Pereira, A. E. Ruano, C. Negreira, and M. Graça Ruano, “Neural network models for non-invasive two-point temperature monitoring in a homogeneous medium irradiated by therapeutic ultrasound”, in *IFMBE Proceedings Series (3rd European Medical and Biological Engineering Conference (EMBE’05))*, Peter Kneppo and Jiří Hozman, Eds., Prague, Czech Republic, November 2005, vol. 11, Paper # 2473.
7. C. A. Teixeira, M. Graça Ruano, A. E. Ruano, W. C. A. Pereira, and C. Negreira, “Single black-box models for two-point non-invasive temperature prediction”, in *Proc. of the 6th IFAC Symposium on Modelling and Control in Biomedical Systems(MCBMS’06)*, D. D. Feng, O. Dubios, J. Zaytoon, and E. Carson, Eds., Reims, France, September 2006, pp. 135–140, Elsevier.
8. C. A. Teixeira, M. Graça Ruano, A. E. Ruano, and W. C. A. Pereira, “Non-invasive time-spatial temperature simulation using neural networks”, in *Proc. 7th Portuguese Conference on Automatic Control (Controlo 2006)*, M. A. Botto, Eds., Lisbon, Portugal, September 2006, Paper #92.
9. C. A. Teixeira, M. Graça Ruano, A. E. Ruano, and W. C. A. Pereira, “Non-invasive tissue temperature evaluation during application of therapeutic ultrasound: precise time-spatial non-linear modelling”, in *IFMBE Proceedings-WC 2006 World Congress on Medical Physics and Biomedical Engineering*, S. I. Kim and T. S. Suh Seoul, Eds., Korea, August 2006, pp. 70–73.
10. C. A. Teixeira, A. E. Ruano, M. Graça Ruano and W. C. A. Pereira, “Non-invasive black-box temperature simulation: precise spatial generalisation”, in *Proc. of the XX Brazilian Congress on Biomedical Engineering-XX CBEB*, S. S. Mühlen, Eds., São Paulo, Brasil, October 2006, pp. 229–232.
11. C. A. Teixeira, M. Graça Ruano, A. E. Ruano, and W. C. A. Pereira, “Open source data sensing software for ultrasonic non-invasive temperature estimation”, in *Proc. of 5th Ibero-American congress on Sensors - Ibersensor 2006*, H. Gomez, Eds., Montevideo, Uruguay, September 2006, Paper # 36.
12. C. A. Teixeira, M. Graça Ruano, A. E. Ruano, and W. C. A. Pereira, “A soft-computing approach for non-invasive temperature estimation”, in

*Proc. of the Global Educational Technology Symposium*, Faro, Portugal, July 2006, Paper #14.

13. C. A. Teixeira, W. C. A. Pereira, A. E. Ruano, and M. Graça Ruano, “NARX structures for non-invasive temperature estimation in non-homogeneous media”, *IEEE International Symposium on Intelligent Signal Processing (WISP 2007)*, Alcalá de Henares, Spain, October 2007 (*submitted*).
14. C. A. Teixeira, M. Graça Ruano, A. E. Ruano, and W. C. A. Pereira, “A neuro-genetic approach to non-invasive temperature estimation in multi-layered media under ultrasound therapy”, *19<sup>th</sup> International Congress on Acoustics (ICA '07)*, Madrid, Spain, September 2007 (*submitted*).

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#### PATENTS

1. C. A. Teixeira, M. Graça Ruano, Plataforma de aquisição de dados para a estimação não invasiva de temperatura, Patente nacional nº 103530 (Em avaliação pelo INPI)

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#### OTHER PUBLICATIONS

1. C. A. Teixeira, “Controlo de temperatura, pH e condutividade da solução nutriente de uma estufa hidropónica”, Tech. Rep., University of Algarve, 2003, Final graduate report.
2. C. A. Teixeira, G. Cortela, H. Gomez, M. G. Ruano, A. E. Ruano, C. Negrera, and W. C. A. Pereira, “Temperature models of a homogeneous medium under therapeutic ultrasound”, *IFMBE Newsletter*, vol. 69, pp. 52–56, 2004.

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#### REWARDS

1. Winner of the merit scholarship at University of Algarve for the year 2002/2003.
2. Third prize in the IFMBE Student Paper Competition in conjunction with III Latin American congress on Biomedical engineering (III CLAEB), João Pessoa, Brazil, September 22-25, 2004