CURRICULUM VITAE

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Umberto Ciri

Research Associate
Department of Mechanical Engineering
The University of Texas at Dallas
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Education

2019 August 17th	Ph.D. in Mechanical Engineering The University of Texas at Dallas Thesis: "Analysis of model-free control of wind farms using large-eddy simulations" Advisor: Prof. Stefano Leonardi
2015 April 28th	M.Sc. in Aerospace Engineering, *cum laude* Università di Pisa Thesis: "Large-eddy simulations of wind turbines" Advisor: Prof. Maria Vittoria Salvetti Prof. Stefano Leonardi
2012 November 27th	B.Sc. in Aerospace Engineering, *cum laude* Università di Pisa Thesis [*in Italian*]: "Metodi di risoluzione delle equazioni di strato limite" Advisor: Prof. Maria Vittoria Salvetti

Employment history

2019 – to date	Research Associate Department of Mechanical Engineering The University of Texas at Dallas
2015 – 2019	Graduate Research Assistant Department of Mechanical Engineering The University of Texas at Dallas
2018 – 2019	Teaching Assistant Department of Mechanical Engineering The University of Texas at Dallas

Honors and Awards

2018 "*Most-out-of-the-box*" Award
U-Hack Med, UT Southwestern (https://www.u-hackmed.org)

2018 NTAEE Scholarship Award
North Texas Association of Energy Engineers (NTAEE)

2017 Doctoral Research Award in Mechanical Engineering
Erik Jonsson School of Engineering and Computer Science,
The University of Texas at Dallas

2017 Sponsored student for NSF I/UCRC Biennial Meeting, Washington, DC, July 26th–28th
NSF I/UCRC WindSTAR

Publications

Google scholar link: `https://scholar.google.com/profile`

Article in refereed journals:

1. **Ciri U.**, Bennett R.L., Bhui R., Molony D.S., Samady H., Meyer C., Hayenga H.N. & Leonardi S. Coupled bio-hemodynamics simulations of leukocyte adhesion in coronary arteries: comparison against clinical data. *Journal of Biomechanics* (under review).

2. Bernardoni F., **Ciri U.**, Rotea M. & Leonardi S. Simplifying the optimization of an array of turbines into the optimization of smaller indepedent clusters. *Journal of Renewable and Sustainable Energy* (under review).

3. **Ciri U.**, Garimella M.M., Bernardoni F., Bennett R.L. & Leonardi S. Uncertainty quantification of wildfire propagation forecast. *International Journal of Wildland Fire* (under review).

4. **Ciri U.** & Leonardi S. (2021) Heat transfer in a turbulent channel flow with super-hydrophobic or liquid-infused walls. *Journal of Fluid Mechanics* **908**, A28.

5. Yu H., **Ciri U.**, Leonardi S. & Malik A. (2020) Decoupled Effects of Localized Camber and Spanwise Bending for Flexible Thin Wing. *AIAA Journal* **58**(5): 2293–2306.

6. Rocchio B., **Ciri U.**, Leonardi S. & Salvetti M.V. (2020) Appraisal and calibration of the Actuator Line Model for the prediction of turbulent separated wakes. *Wind Energy* **23**(5): 1231–1248.

7. Santoni C., García-Cartagena E.J., **Ciri U.**, Zhan L., Iungo G.V. & Leonardi S. (2020) One-way mesoscale-microscale coupling for simulating a wind farm in north Texas. *Wind Energy*, **23**(3): 691–710.

8. **Ciri U.**, Leonardi S. & Rotea M.A. (2019) Evaluation of log-of-power extremum seeking control for wind turbines using large eddy simulations. *Wind Energy*, **22**(7): 992–1002.

9. **Ciri U.**, Rotea M.A. & Leonardi S. (2018) Effect of the turbine scale on yaw control. *Wind Energy*, **21**(12): 1395–1405.

10. **Ciri U.**, Bhui R., Bailon-Cuba J., Hayenga H.N. & Leonardi S. (2018) Dependence of leukocyte adhesion on instantaneous pulsatile flow. *Journal of Biomechanics*, **76**: 84–93.

11. Iungo G.V., Santhanagopalan V., **Ciri U.**, Viola F., Zhan L., Rotea M.A. & Leonardi S. (2018) Parabolic RANS solver for low-computational-cost simulations of wind turbine wakes. *Wind Energy*, **21**(3): 184–197.

12. **Ciri U.**, Rotea M.A. & Leonardi S. (2017) Model-free control of wind farms: a comparative study between individual and coordinated extremum seeking. *Renewable Energy*, **113**: 1033–1045.

13. **Ciri U.**, Rotea M.A., Santoni C. & Leonardi S. (2017) Large-eddy simulations with extremum-seeking control for wind turbine array power optimization. *Wind Energy*, **20**(9): 1617–1634.

14. **Ciri U.**, Petrolo G., Salvetti M.V. & Leonardi S. (2017) Large-eddy simulations of two in-line turbines in a wind tunnel with different inflow conditions. *Energies*, **10**(6): 821.

Conference proceedings (peer-reviewed):

15. **Ciri U.**, Rotea M.A., Leonardi S. (2020) Increasing wind farm efficiency by yaw control: beyond ideal studies towards a realistic assessment. *Journal of Physics: Conference Series*, **1618**: 022029.

16. Bernardoni F., **Ciri U.**, Rotea M., Leonardi S. (2020) Real time identification of clusters of turbines. *Journal of Physics: Conference Series*, **1618**: 022032.

17. **Ciri U.** & Leonardi S. (2019) Heat transfer in a turbulent channel flow with super-hydrophobic or liquid-infused surfaces on one wall. In: *Proc. of the* 11^{th} *International Symposium on Turbulence and Shear Flow Phenomena (TSFP11)*, July 30^{th}–August 2^{nd}, Southampton, UK.

18. **Ciri U.**, Santoni C., Bernardoni F., Salvetti M.V. & Leonardi S. (2019) Development of a surrogate model for wind farm control. In: *Proc. of the 2019 American Control Conference*, July 10^{th}–12^{th}, Philadelphia, PA, USA.

19. Rocchio B., **Ciri U.**, Salvetti M.V. & Leonardi S. (2019) Large eddy simulation of a wind farm experiment. In: *Direct and Large-Eddy Simulation XI*, pp. 595–601.

20. Santoni C., García Cartagena E.J., **Ciri U.**, Iungo G.V. & Leonardi S. (2018) Coupling of the mesoscale Weather Research and Forecast model to a high fidelity large eddy simulation. *Journal of Physics: Conference Series*, **1037**: 062010.

21. **Ciri U.**, Carrasquillo K., Santoni C., Iungo G.V., Salvetti M.V & Leonardi S. (2018) Effects of the subgrid-scale modeling in the large-eddy simulations of wind turbines. In: *Direct and Large-Eddy Simulation X*, pp. 109–115.

22. **Ciri U.**, Rotea M.A. & Leonardi S. (2017) Nested extremum-seeking control for wind farm power optimization. In: *Proc. of the 2017 American Control Conference*, May 24th–26th, Seattle, WA, USA, pp. 25–30.

23. **Ciri U.**, Rotea M.A., Santoni C. & Leonardi S. (2016) Large eddy simulation for an array of turbines with extremum seeking control. In: *Proc. of the 2016 American Control Conference*, July 6th–8th, Boston, MA, USA, pp. 531–536.

24. Iungo G.V., Viola F., **Ciri U.**, Leonardi S. & Rotea M.A. (2016) Reduced order model for optimization of power production from a wind farm. In: *Proc. of the* 34th *Wind Energy Symposium, AIAA SciTech Forum*, January 9th–13rd, San Diego, CA, USA, (AIAA 2016–2200).

25. Santoni C., **Ciri U.**, Rotea M.A. & Leonardi S. (2015) Development of a high-fidelity CFD code for wind farm control. In: *Proc. of the 2015 American Control Conference*, July 1st–3rd, Chicago, IL, USA, pp. 1715–1720.

26. Iungo G.V., Viola F., **Ciri U.**, Rotea M.A. & Leonardi S. (2015) Data-driven RANS for simulations of large wind farms. *Journal of Physics: Conference Series*, **625**: 012025.

Contributed (unrefereed) abstracts and/or oral presentations at professional meetings:
Presenter underlined

27. **Ciri U.**, Garimella M.M., Bernardoni F., Bennett R.L. & Leonardi S. (2020) Uncertainty Quantification of Wildfire Forecast Error. Abstract A196-07, AGU Fall Meeting (online), 1st–17th December.

28. **Ciri U.**, Wright K. & Leonardi S. (2020) Conjugate heat transfer in turbulent flows inside rough ducts, 73rd Annual Meeting of the APS Division of Fluid Dynamics, Volume 65, 22nd-24th November, (online).

29. Zangrandi M., Bernardoni F., **Ciri U.**, Quadrio M. & Leonardi S. (2020) Dependence of wind farm performances on the terrain topography, 73rd Annual Meeting of the APS Division of Fluid Dynamics, Volume 65, 22nd-24th November, (online).

30. Yu H., **Ciri U.**, Leonardi S. & Malik A. (2020) A simplified model for drag evaluation of a streamlined body with surface roughness, 73rd Annual Meeting of the APS Division of Fluid Dynamics, Volume 65, 22nd-24th November, (online).

31. **Ciri U.** & Leonardi S. (2020) Statistical Analysis of Particle Dispersion, VI Coloquio de Matemáticas Aplicadas, II Encuentro Internacionales de Matemáticas Aplicadas, 11th-13th November, (online).

32. **Ciri U.**, Bennett R.L., Bhui R., Hayenga H.N. & Leonardi S. (2020) Towards a Predictive Model of Atherosclerosis Progress: Validation against Clinical Data of Coupled Bio-Hemodynamics Simulations of Leukocyte Adhesion in a Coronary Artery. SB3C (Summer biomechanics, bioengineering, biotransport) Virtual Conference, 2020.

33. **Ciri U.** & Leonardi S. (2019) Effect of the Interface Dynamics on Heat Transfer over Super-hydrophobic and Liquid-infused Surfaces. 2nd Pacific Rim Thermal Engineering Conference, 13th–17th December, Maui, HI, USA.

34. Leonardi S., Garimella M.M. & **Ciri U.** (2019) Effect of turbulence on wildfire propagation. 72nd Annual Meeting of the APS Division of Fluid Dynamics, Volume 64, 23rd–26th November, Seattle, WA, USA.

35. **Ciri U.**, Leonardi S. (2019) A direct numerical simulation study of heat transfer over super-hydrophobic and liquid-infused surfaces. 72nd Annual Meeting of the APS Division of Fluid Dynamics, Volume 64, 23rd–26th November, Seattle, WA, USA.

36. Yu H., **Ciri U.**, Malik A. & Leonardi S. (2019) Direct numerical simulation for irregular roughness on a curved surface. 72nd Annual Meeting of the APS Division of Fluid Dynamics, Volume 64, 23rd–26th November, Seattle, WA, USA.

37. Bernardoni F., **Ciri U.**, Rotea M.A. & Leonardi S. (2019) Identification of clusters of turbines in waked conditions through SCADA data. 72nd Annual Meeting of the APS Division of Fluid Dynamics, Volume 64, 23rd–26th November, Seattle, WA, USA.

38. **Ciri U.**, Leonardi S. & Rotea M.A. (2019) Wind Power Maximization using Log-of-Power Extremum Seeking, Wind Energy Science Conference (WESC 2019), June 17th–20th, Cork, Ireland.

39. **Ciri U.**, Bernardoni F., Santoni C. & Leonardi S. (2019) Stochastic method based on high-fidelity simulations to estimate AEP, Wind Energy Science Conference (WESC 2019), June 17th–20th, Cork, Ireland.

40. Bernardoni F., **Ciri U.**, Salvetti M.V. & Leonardi S. (2019) Prediction of the aerodynamic properties of the flow over irregular rough walls through a stochastic approach, Direct and Large-Eddy Simulation XII, June 5th–7th, Madrid, Spain.

41. Rocchio B., **Ciri U.**, Salvetti M.V. & Leonardi S. (2019) Large-eddy simulations of separated wakes with the actuator line model, Direct and Large-Eddy Simulation XII, June 5th–7th, Madrid, Spain.

42. **Ciri U.** & Leonardi S. (2019) DNS study of turbulent heat transfer over super-hydrophobic and liquid-infused surfaces, 4th Thermal and Fluids Engineering Conference, April 14th–17th, Las Vegas, NV, USA.

43. **Ciri U.** & Leonardi S. (2018) Turbulent heat transfer over super-hydrophobic and liquid-infused surfaces, 71st Annual Meeting of the APS Division of Fluid Dynamics, Volume 63, 18th–20th November, Atlanta, GA, USA.

44. Bernardoni F., **Ciri U.**, Salvetti M.V. & Leonardi S. (2018) A stochastic approach to predict flow properties over irregular rough walls, 71st Annual Meeting of the APS Division of Fluid Dynamics, Volume 63, 18th–20th November, Atlanta, GA, USA.

45. Santoni C., García-Cartagena, E.J., **Ciri U.**, Iungo G.V. & Leonardi S. (2018) Turbulence generation in a large eddy simulation of a wind farm coupling meso- and micro-scale, 71st Annual Meeting of the APS Division of Fluid Dynamics, Volume 63, 18th–20th November, Atlanta, GA, USA.

46. Rocchio B., **Ciri U.**, Leonardi S. & Salvetti M.V. (2018) Stochastic calibration of the actuator line model parameters, 71st Annual Meeting of the APS Division of Fluid Dynamics, Volume 63, 18th–20th November, Atlanta, GA, USA.

47. Rocchio B., **Ciri U.**, Salvetti M.V. & Leonardi S. (2018) Actuator line model predictions of turbulent wakes: stochastic sensitivity analysis to model parameters. 12th European Fluid Mechanics Conference, 9th–13rd September, Wien, Austria.

48. Rocchio B., **Ciri U.**, Salvetti M.V. & Leonardi S. (2018) Actuator line model predictions of turbulent wakes. iTi Conference on Turbulence VIII, 4th–7th September, Bertinoro, Italy.

49. Bernardoni F., **Ciri U.**, Rocchio B., Salvetti M.V. & Leonardi S. (2018) Prediction model for aerodynamic flow over roughness by means of stochastic techniques. iTi Conference on Turbulence VIII, 4th–7th September, Bertinoro, Italy.

50. **Ciri U.** & Leonardi S. (2018) Heat Transfer over Super-Hydrophobic and Liquid-Infused Surfaces. 13th World Congress in Computational Mechanics, 22nd–27th July, New York City, NY, USA.

51. Santoni C., **Ciri U.** & Leonardi S. (2018) Effect of Topography on the Power Production and Wake Recovery of a Wind Turbine. 13th World Congress in Computational Mechanics, 22nd–27th July, New York City, NY, USA.

52. Santoni C., García-Cartagena, E.J., **Ciri U.**, Iungo G.V. & Leonardi S. (2018) Coupling of meso-scale weather and research forecasting model to a high fidelity Large Eddy Simulation. The Bluebonnet Symposium on Thermal and Fluid Sciences, 28th April, Dallas, TX, USA.

53. Bernardoni F., Santoni C., **Ciri U.**, Salvetti M.V. & Leonardi S. (2018) Uncertainty Quantification for the prediction of the drag of an undulated wall. The Bluebonnet Symposium on Thermal and Fluid Sciences, 28th April, Dallas, TX, USA.

54. **Ciri U.** & Leonardi S. (2018) Heat transfer over liquid-infused and super-hydrophobic surfaces. The Bluebonnet Symposium on Thermal and Fluid Sciences, 28th April, Dallas, TX, USA. 2018

55. **Ciri U.**, Arenas-Navarro, I., García Cartagena E.J., Solano M. & Leonardi S. (2018) Heat transfer over super hydrophobic and liquid infused surfaces. 3rd Thermal and Fluids Engineering Conference, 4th–7th March, Ft. Lauderdale, FL, USA.

56. **Ciri U.**, Rotea M.A. & Leonardi S. (2017) Control strategies for wind farm power optimization: LES study. 70th Annual Meeting of the APS Division of Fluid Dynamics, Volume 62, 19th–21st November 2017 Denver, CO, USA.

57. Rocchio B., Cilurzo L., **Ciri U.**, Salvetti M.V. & Leonardi S. (2017) Appraisal of ALM predictions of turbulent wake features, 70th Annual Meeting of the APS Division of Fluid Dynamics, Volume 62, 19th–21st November, Denver, CO, USA.

58. **Ciri U.**, Rotea M.A. & Leonardi S. (2017) Evaluation of active wake steering using large-eddy simulations. NAWEA Symposium 2017, September 26th–29th, Ames, IA, USA.

59. **Ciri U.**, Salvetti M.V. & Leonardi S. (2017) Large-eddy simulation of two aligned wind turbines. The Bluebonnet Symposium on Thermal and Fluid Sciences, April 21st, Dallas, TX, USA.

60. **Ciri U.**, Rotea M.A. & Leonardi S. (2016) Yaw control for power optimization of an array of wind turbines: large-eddy simulations. 69th Annual Meeting of the APS Division of Fluid Dynamics, Volume 61, Number 20, November 20th–22nd, Portland, OR, USA.

61. Santoni C., **Ciri U.** & Leonardi S. (2016) Performance of wind turbine over a ridged terrain. 69th Annual Meeting of the APS Division of Fluid Dynamics, Volume 61, Number 20, November 20th–22nd, Portland, OR, USA.

62. Iungo G.V., Camarri S., **Ciri U.**, El-Asha, S., Leonardi S., Rotea M.A., Santhanagopalan V., Viola F. & Zhan L. (2016) Proactive monitoring of an onshore wind farm through lidar measurements, SCADA data and a data-drive RANS solver. 69th Annual Meeting of the APS Division of Fluid Dynamics, Volume 61, Number 20, November 20th–22nd, Portland, OR, USA.

63. Santoni C., **Ciri U.** & Leonardi S. (2016) Flow field past a wind turbine over a wavy terrain. EUROMECH colloquium 576: Wind Farms in Complex Terrains, June 8th–10th, Stockholm, Sweden.

64. **Ciri U.**, Rotea M.A., Santoni C. & Leonardi S. (2016) Extremum-Seeking Control for Power Production Optimization. Windfarms 2016, May 23rd–25th, Dallas, TX, USA.

65. Santhanagopalan V., **Ciri U.**, Viola F., Leonardi S. & Iungo G.V. (2016) Data-Drive RANS solver for predicting wake interactions of a wind turbine column. Windfarms 2016, May 23rd–25th, Dallas, TX, USA.

66. Santoni C., **Ciri U.**, Anderson W. & Leonardi S. (2016) Performance of Wind Turbine on a Wavy Terrain. Windfarms 2016, May 23rd–25th, Dallas, TX, USA.

67. García Cartagena E.J., Santoni C., **Ciri U.**, Anderson W., Iungo G.V. & Leonardi S. (2016) Assessment of wind farm performances coupling meso- and micro-scale models. Windfarms 2016, May 23rd–25th, Dallas, TX, USA.

68. **Ciri U.**, Salvetti M.V. & Leonardi S. (2015) Effects of subgrid-scale modeling on wind turbines flows. 68th Annual Meeting of the APS Division of Fluid Dynamics, Volume 60, Number 21, November 22nd–24th, Boston, MA, USA.

69. Iungo G.V., Viola F., **Ciri U.**, Camarri S., Rotea M.A. & Leonardi S. (2015) Data-driven RANS for prediction of wind turbine wakes. 68th Annual Meeting of the APS Division of Fluid Dynamics, Volume 60, Number 21, November 22nd–24th, Boston, MA, USA.

70. García Cartagena E.J., Santoni C., **Ciri U.**, Iungo G.V. & Leonardi S. (2015) Coupling the Weather Research and Forecasting (WRF) model and Large Eddy Simulations with Actuator Disk Model: predictions of wind farm power production. 68th Annual Meeting of the APS Division of Fluid Dynamics, Volume 60, Number 21, November 22nd–24th, Boston, MA, USA.

71. Santoni C., **Ciri U.** & Leonardi S. (2015) Effect of topography on wind turbine power and load fluctuations. 68th Annual Meeting of the APS Division of Fluid Dynamics, Volume 60, Number 21, November 22nd–24th, Boston, MA, USA.

72. **Ciri U.**, Santoni C., Iungo G.V., Rotea M.A. & Leonardi S. (2015) Wake effects in wind farm performances. Windfarms 2015, July 8th–10th, Leuven, Belgium.

73. Santoni C., **Ciri U.** & Leonardi S. (2015) Effect of topography on wind turbine power fluctuations and blade loads. Windfarms 2015, July 8th–10th, Leuven, Belgium.

74. Iungo G.V., Viola F., **Ciri U.** & Leonardi S. (2015) Data-driven RANS simulations of wind turbine wakes. Windfarms 2015, July 8th–10th, Leuven, Belgium.

Service

Reviewer for: *Wind Energy*, *Journal of Wind Engineering and Industrial Aerodynamics*, *Journal of Renewable and Sustainable Energy*, *Energies*, *Atmosphere*, *Sustainability*, *International Journal of Electrical Power and Energy Systems*.

Jonsson School Dean search: graduate students' representative for the finalists' interview process.

Membership in professional organizations: *American Physical Society* (APS), *American Geophysical Union* (AGU).