

November 2019

Rock River Valley Section

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Event

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The Institute of Electrical and Electronic Engineers, Inc.

IEEE RRV Section, EMC Chapter Meeting

SERVING IEEE MEMBERS OF NORTH CENTRAL ILLINOIS AND SOUTH CENTRAL WISCONSIN

WHEN Thursday, November 21, 2019

WHERE

Northern Illinois University
College of Engineering, Room EB 354
590 Garden Rd.
DeKalb, IL 60115

Parking in lot 40 off Kiswaukee Dr. east of the building

AGENDA

6:00 PM Networking
6:30 PM Dinner
7:15 PM Presentation



Designing with Capacitive Touch: Time to Replace That old mechanical switch!

Christopher Semanson
Renesas Electronics America

Interfacing to devices such as our smartphones, appliances, and cars have become the cornerstone of high end industrial design. Smooth, polished interfaces that have once found themselves limited to high end devices such as smart phones, have now found their way on commodity designs that we often use on a daily basis. The motivation for this includes a wide variety of positives that all stem from removing mechanical button from your user interface. Lastly, and probably most importantly, you gain a nominal cost reduction on a per button basis as the button is not a membrane or mechanical switch assembly; these usually require assembly time which is only exacerbated during high volume commodity designs. With these benefits being evident, it is no wonder you see capacitive touch interfacing being introduced to more than just our smartphones. However, a good design with capacitive touch isn't as simple as replacing the buttons on your legacy oven interface and hoping it will work. A successful design is rooted in the center of:

- Understanding the technology behind the peripheral as each Microcontroller's (MCU) implementation is just a little bit different, and they would say unique.
- Understanding parasitic capacitance and how things like floating wires influence the system.
- Understanding the software that controls the peripheral hardware block; and
- Understanding how to design your product such that when undergoing traditional EMC testing (to gain that coveted CE mark), you are able to breeze right past it.

The key points addressed will first be design related, topics such as: how such a device operates, and the components that make up a capacitive touch system. Then move on to user feedback, highlighting how simple things like driving multiple LEDs off of an unregulated supply, or leaving LED traces floating could negative effect system performance. Next, system level testing to pass IEC 61000 series testing will be touched on.

Christopher Semanson has grown up in the metro Detroit area. He recently took employment in North Carolina at Renesas Electronics America. He is working with both Electrical System's applications for general purpose, and more recently functional safety systems for automotive power management circuits (PMICS). He previously worked at Ford Motor Company, doing Powertrain Controls, Systems Engineering, and Advanced Driver Assistance (ADAS) Features. He was very instrumental in helping Professor Mark Steffka establish a well-known EMC lab course at the University of Michigan at Dearborn. He holds a masters of Electrical Engineering, and a Bachelor of Science in Electrical and Computer Engineering from the University of Michigan at Dearborn.

MEAL INFORMATION

Dinner entrée will feature your choice of Vegetarian or Non-Vegetarian meals.

Members & Student Members: FREE,
Non-members: \$10,
Student non-members: \$5
Presentation only: FREE

Please register online at

<https://events.vtools.ieee.org/m/208116>

or by emailing Diane Sennebogen at diane.brock@utas.utc.com by Thursday, Nov 21 at 1 pm. Please include the following: name, phone number, email address, and IEEE member number. The meeting is open to the general public.

IEEE Rock River Valley Section 2019 Calendar of Events

November 21: RRVS Section Meeting at NIU

December: No meeting

*Dates and locations are subject to change

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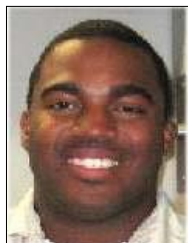
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joetminan@ieee.org
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815-226-6098



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Alkesh.patel@ieee.org



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jamalshafii@ieee.org
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815-394-2420



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NIU St Br Counselor
Educational Act. Chair
d.zinger@ieee.org
815-753-0540



Eduardo Vasquez
Young Professionals
Chair
evasquez@ieee.org



Bob Parro
Section Advisor
B.parro@ieee.org



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Section Advisor
G.L.Blank@ieee.org

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Industry Applications Society Chapter
Established 1992

Joint Computer/Control Systems Society Chapter
Established 1995

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Established 2007

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