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NEST 2023
New England Sequencing & Timing

Annual Meeting

April 1, 2023
University of Connecticut
Zachs Family Fine Arts Administration Building
Room ZFA 103

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Music Dynamics Lab
UCONN

https://musicdynamicslab.uconn.edu/

Meeting Schedule

9:00 Registration and Breakfast

9:20 **Welcome** (Ed Large, University of Connecticut)

9:30 **Talk Session 1**

- 9:30 **1A. Integer Ratio Biases in Rhythm Reproduction Are Predicted by Neural Oscillation and Hebbian Learning** (Hayes Brenner, University of Connecticut)
- 9:50 **1B. Using Artificially Generated Information to Enhance the Perceptual Control of Action** (Steven Harrison, University of Connecticut & Benjamin De Bari, Lehigh University)
- 10:10 **1C. Phase Against the Machine: A Dynamical Model of Phasing Performance Against a Metronome** (Ji Chul Kim, University of Connecticut)

10:30 Coffee Break

10:40 **Talk Session 2**

- 10:40 **2A. Can Machines "Feel" The Beat? The Impact Of Extreme Syncopation on State-of-the-Art Beat Tracking Models** (Chuyang Chen, New York University)
- 11:00 **2B. Neuronal Dynamics of Strong Anticipation in Musical Action** (Iran R. Roman, New York University)

11:40 **Research Directions**

- 11:40 **RdA. Network Physiology in Perception-Action: Implications for Research** (Susan Tilbury, University of Connecticut)
- 11:50 **RdB. Emergent Motor Timing Enhances Temporal Perception** (Helene Serre & Tri Nguyễn, Northeastern University)
- 12:10 **RdC. Perceptual Practice and Changes in the Dynamics of Bimanual Coordination** (Spencer Ferris & Steven Harrison, University of Connecticut)

12:20 Lunch (Provided)

12:40 **Bulgarian Dance Workshop**

Variations in Motion: Shared Patterns of Dance Steps in Southeastern Europe (Daniel Goldberg, University of Connecticut)

1:30 **Talk Session 3**

- 1:30 **3A. Perceptual Entrainment in the Bayesian Brain** (Jon Cannon, McMaster University) - Virtual Talk
- 2:10 **3B. Pitch Biases Timing in Perception and Production** (Jesse Pazdera, McMaster University) - Virtual Talk

2:30 Coffee Break

2:40 **Talk Session 4**

2:40 **4A. Speeding Up and Slowing Down in Group Synchronization Tasks**
(Dobromir Dotov, University of Nebraska Omaha) - Virtual Talk

3:00 **4B. A Temporal Correlation Model for Rhythmic Expectancy**
(Peter Cariani, Boston University)

3:40 Coffee Break

3:50 **Talk Session 5**

3:50 **5A. A Recurrent Neural Network for Rhythmic Timing**
(Klavdia Zemlianova, New York University) - Virtual Talk

4:10 **5B. Timing and Time-Warping in a Complex Motor Task: Cracking a Bullwhip**
(Aleksei Krotov, Marta Russo, Mohsen Sadeghi, Reza Sharif Razavian & Dagmar Sternad, Northeastern University)

4:50 **Group Discussion** (Ji Chul Kim, Moderator)

6:00 **Cocktails, Dinner & Discussion**

Location: Ed Large's Home

Abstracts

Talk Session 1 (9:30-10:30)

9:30 **1A. Integer Ratio Biases in Rhythm Reproduction Are Predicted by Neural Oscillation and Hebbian Learning**

Hayes Brenner (University of Connecticut)

Recent empirical research has shown that when perceiving and reproducing auditory rhythms, humans display a bias toward rhythms which contain Inter-Onset Intervals (IOIs) that are related by small integer ratios (i.e. IOIs with integer values no larger than 3). These findings suggest that integer ratio bias may be a universal feature of rhythm perception for humans. However, previous attempts to model rhythm perception that have incorporated this phenomenon have not been able to incorporate rhythmic learning. Conversely, models that have been able to incorporate rhythmic learning have not demonstrated the phenomenon of integer ratio bias. We argue that a model which displays not only learning, but also an intrinsic bias toward integer ratio IOIs which derive from constraints based on human physiology, is necessary for a fully embodied, dynamical, and physiologically plausible model of rhythmic reproduction and perception. We have previously proposed that oscillatory networks with Hebbian learning could be used as a general model of rhythmic development; in this paper, we show that this model is capable of learning complex rhythms by internalizing both the amplitudes and phases of internal connections between neural oscillators that are either in-phase or anti-phase with one another. We additionally exhibit how this model can replicate the phenomenon of integer ratio bias. Predictions for future behavioral and neural experiments are additionally presented.

^ BACK TO SCHEDULE ^

9:50 **1B. Using Artificially Generated Information to Enhance the Perceptual Control of Action**

Steven Harrison (University of Connecticut) & Benjamin De Bari (Lehigh University)

Wearable biofeedback technologies are a promising means of improving the stability of motor behavior in everyday life. In our lab we have been investigating the potential of online biofeedback to improve the stability of balance, coordination, and navigation abilities. In this talk we focus on recent work we have performed to investigate the effect of using a technology that generates haptic (vibrotactile) information about head position relative to the environment. Specifically, participants performed the task of standing quietly while experiencing mediolateral-position specific changes in the vibration intensity in tactors (i.e. vibrating elements) positioned on the left and right side of their head. For each tactor, vibration intensity was at its lowest when the head was positioned at a pre-established neutral posture, and increased with lateral displacement. Across conditions we varied the spatial resolution of the vibrotactile information, such that the intensity of vibration reached its maximum at either 5, 10, 15, or 20 mm of lateral displacement. We found that vibrotactile information allowed participants to reduce their body sway by more than 40% and that this effect persisted under dual tasking conditions. Vibrotactile information is found to impact both the stability of body posture modeled as a fixed point attractor (task dynamics), and the stability of coordination between head, hip, and center of pressure (coordination dynamics). We consider the potential of biofeedback systems to provide informational resources that can positively reconfigure the landscape of balance related affordances.

^ BACK TO SCHEDULE ^

10:10 **1.3 Phase Against the Machine: A Dynamical Model of Phasing Performance Against a Metronome**

Ji Chul Kim (University of Connecticut)

Phasing is a compositional technique in modern music that shifts the relative phase between identical patterns over time. In a recent exploratory study, phasing was used as an experimental paradigm to study intentional sensorimotor desynchronization. The task was to start tapping in phase with a metronome and, upon hearing a cue, advance each tap increasingly ahead of the metronome until reaching the in-phase relation again, completing one phasing lap. The participants, who were unfamiliar with the task, produced various phasing behaviors, which were categorized as successful, unsuccessful, or incomplete based on the number of phasing laps made in an individual trial. A strong effect of metronome tempo was found in the proportion of trial types. Here I present a minimal model that captures the dynamics of phasing performance in the interaction of the involuntary tendency of synchronization and the intention of desynchronization. The model is a periodically forced adaptive-frequency oscillator with an added term for intentional frequency control. It is shown that the model can produce all three phasing behaviors and replicate the tempo effect found in the human experiment. This study provides further evidence that phasing performance is governed by the nonlinear dynamics of rhythmic coordination.

^ BACK TO SCHEDULE ^

Talk Session 2 (10:40-11:40)

10:40 **2A. Can Machines "Feel" The Beat? The Impact Of Extreme Syncopation on State-of-the-Art Beat Tracking Models**

Chuyang Chen (New York University)

Missing pulse rhythms are a type of heavily syncopated rhythms with no energy at the beat frequency. Interestingly, humans can listen to these rhythms and correctly tap the beat. Beat tracking is a well established task in the field of music information retrieval (MIR) and there exist models that can find the beat in music, independent of how syncopated it may be. However, no study has systematically looked at how energy content at the beat frequency affects these models' performance. In this study, we created six different datasets with controlled levels of syncopation, resulting in 6 datasets from no energy at the beat frequency to maximal energy at the beat frequency. We used these datasets to study the performance of four popular beat tracking models, two of which are considered to be state-of-the-art. Our findings show that all models are affected by a lack of energy at the beat frequency in heavily syncopated rhythms. We also identify and characterize biases in beat tracking predictions that are common across models. These results shed light on the types of adjustments needed to make these models accurately find the beat in missing pulse rhythms.

^ BACK TO SCHEDULE ^

11:00 **2B. Neuronal Dynamics of Strong Anticipation in Musical Action**
Iran R. Roman (New York University)

When humans synchronize with a musical stimulus, neural transmission delays and spontaneous rates of activity play a role in the observed asynchronies between human actions and the underlying musical tempo. Here we present two oscillatory dynamical system models of music synchronization, validated with empirical data. The first model explains the systematic human tendency to anticipate a metronome's beats using anticipation mechanisms previously observed in non-biological delayed-coupled systems. This model highlights the role of neural transmission delays in adaptive human synchronization. The second model explains how interpersonal synchronization is affected by an individual's spontaneous rates of movement. It uses behavioral-timescale plasticity mechanisms that adjust the model's rate of activity to match a stimulus' rate. If the stimulus ceases it returns to its original rate due to an elasticity mechanism. Together, these models demonstrate the theoretical plausibility that transmission delays and spontaneous oscillatory activity play a role in human synchronization behavior with music. Models also make testable predictions, and pave the way for future behavioral research that further validates these mechanisms.

^ BACK TO SCHEDULE ^

Research Directions (11:40 - 12:20)

11:40 **RdA. Network Physiology in Perception-Action: Implications for Research**
Susan Tilbury (University of Connecticut)

The emerging field of network physiology emphasizes the importance of complex interactions between the brain and body for functioning across domains. These interactions are driven by metastable rhythmic relationships, in which systems couple and decouple in a context dependent fashion. For humans to survive and thrive in a dynamic world, they must be able to recover and adapt to external forces and perturbations. Thus, we are interested in better understanding the relationship between physiological network stability-flexibility and psychosocial resilience. Implications for future basic and applied research will be discussed.

^ BACK TO SCHEDULE ^

11:50 **RdB. Emergent Motor Timing Enhances Temporal Perception**
Helene Serre & Tri Nguyễn (Northeastern University)

When performing an action, two timing processes are at play: perceptual and motor timing. To perform a rhythmic movement and to intercept a moving object both involve precise timing. Perceptual and motor timing are far from independent. Perceptual timing is crucial for motor planning and execution: one must identify rhythmic patterns of music to dance on the beat. However, what roles does motor timing play in perception? A growing body of neural and behavioral evidence has highlighted the motor contribution to time discrimination. In these studies, timing in the motor domain has been prescribed or explicitly manipulated. However, timing need not be explicit as motor performance is a dynamic process arising from the interaction of complex neuro- and bio-mechanical subsystems. These subsystems evolve over time and, partly shaped by the mechanical properties of the limbs and constraints from the goal-directed task environment, generate stable spatiotemporal patterns, or 'dynamic primitives'. In such a case, the temporal structure is implicit. Recent studies suggested that implicit timing experienced through action during childhood may consolidate explicit time processing in motor structures. Besides, when acquiring motor skills, the spatiotemporal patterns are initially highly variable but become more stable with practice and settle into a repeatable and often idiosyncratic spatiotemporal pattern. Does this emergent (i.e., implicit) motor timing positively affect perceptual time processing?

To assess this question, we present some results from previous experiments that suggested motor training facilitates selective improvements in discrimination of task-relevant timing intervals. Based on this work, we explore extensions of the paradigm that modulate this effect. Discrete motor timing and rhythmic motor timing were previously shown to be independent processes, evident by the lack of transfer. However, rhythmic motor movement should provide additional information to perceptual estimation compared to discrete movement. Do we 1) observe improvements to perceptual discrimination following rhythmic motor training, and 2) see a difference in the effect compared to that of discrete motor training? Conversely, we investigate factors that may interfere with the transfer from motor learning to timing perception, such as visual feedback delay. Spatial and temporal discrepancies have previously been shown to negatively affect motor performance. Temporal delay may interfere with the motor learning process by delaying the action outcomes from motor execution parameters (such as limb angle, muscle activation, limb velocity). Alternatively, a loss of the sense of control (commonly induced by introducing temporal delay) may cause subjects to view the emergent motor timing as irrelevant, thus interfering with transfer to perceptual discrimination.

^ BACK TO SCHEDULE ^

12:10 **RdC. Perceptual Practice and Changes in the Dynamics of Bimanual Coordination**
Spencer Ferris & Steven Harrison (University of Connecticut)

Perceptual practice occurs when individuals perceive a particular variable in the environment that later aids in the execution of a motor behavior. We are investigating this phenomenon by training individuals to learn to perceive the relative speed of two oscillators, and then determining if this learning impacts the underlying dynamics involved in performing a bimanual coordination task. In this talk, we will discuss the different ways in which perceptual information constrains bimanual coordination, and present evidence that perceptual practice is a potential avenue for increasing a person's ability to coordinate their body if they are currently incapable of doing so. In a proposed experiment, participants will be trained to perceive the relative speed of two oscillators, one moving in a range nearly twice as fast as the other, to later aid them in the performance of a 2:1 bimanual coordination task. A second proposed experiment will determine if the presence of visual feedback that transforms a 2:1 bimanual coordination task from a motor coordination task to a perceptual one has an impact on the stability of 2:1 coordination. Future directions for the apparatus developed for this research will also be considered.

^ BACK TO SCHEDULE ^

Dance Workshop (12:40 - 1:30)

Variations in Motion: Shared Patterns of Dance Steps in Southeastern Europe
Daniel Goldberg (University of Connecticut)

Participants in this workshop will learn how to perform five common folk dances from southeastern Europe. Although each dance is accompanied by music with a different meter, all five dances could be considered variations of the same basic pattern of dance steps. This relationship among dances illustrates the importance of an awareness of culturally appropriate movement when studying musical meter.

^ BACK TO SCHEDULE ^

Talk Session 3 (1:30-2:30)

1:30 **3A. Perceptual Entrainment in the Bayesian Brain**
Jon Cannon (McMaster University)

Humans readily perceive, track, and entrain movement to periodic structures underlying complex auditory rhythms. This process has been repeatedly modeled from a dynamical systems perspective, but these models are tailored to rhythm perception tasks and therefore provide little insight into how rhythm perception might be conceptually related to other perceptual, cognitive, and motor processes. I argue that rhythm perception can be viewed as dynamic inference of a hidden state (rhythm phase, and optionally tempo and meter) based on sensory observations (auditory events) and a model of the probability of an auditory event given the hidden state. When this inference problem is stated formally, solved, and simulated, it reproduces various features of human rhythm perception. It is unique among rhythm perception models in tracking not only stimulus phase and tempo but also phase and tempo uncertainty. It is also unique in predicting from first principles how unfulfilled expectations should warp the perceived passage of time. Although the dynamics of rhythm tracking under this model are closely related to the dynamics of forced, damped oscillators, the inference perspective allows us to plug into the unifying theory of predictive processing and the Bayesian brain, and to draw meaningful connections with another dynamic inference process in the brain: tracking the instantaneous state of one's own body and action.

^ BACK TO SCHEDULE ^

2:10 **3B. Pitch Biases Timing in Perception and Production**
Jesse Pazdera (McMaster University)

Models of pitch perception and time perception typically treat the two as independent processes. However, previous studies have suggested that pitch and timing information may be processed in an integrated manner, such that people perceive higher-pitched sounds to be faster in tempo than lower-pitched sounds with identical timing. We conducted a series of studies to address the relatively limited pitch ranges used in these past studies, so as to better understand the limits of this apparent pitch-time integrality. Across three experiments, we asked participants to compare the tempo of a repeating tone – ranging in pitch from A2 (110 Hz) to A7 (3520 Hz) – to a metronomic standard. We consistently found an inverted U-shaped effect of the tone's pitch height, such that perceived tempo peaked between A4 (440 Hz) and A5 (880 Hz) and decreased at lower and higher octaves. We then replicated this pattern of behavior during a synchronization-continuation tapping experiment, finding that A4 and A5 produced earlier and faster tapping than tones at lower and higher octaves. The discovery of similar patterns of pitch-induced bias across both subjective ratings and sensorimotor timing suggests that these biases arise at the level of perception, rather than decision-making. Meanwhile, the inverted U-shaped relation between pitch and perceived tempo suggests that these biases are more complex than previously thought. Adding to this complexity, a subsequent perceptual experiment showed that the decrease in perceived tempo at extremely high octaves could be abolished by exposing participants to high-pitched tones only. Pitch-induced timing biases therefore appear to depend on relative pitch within a context, rather than on absolute pitch. Identifying the mechanisms behind these biases will be critical for integrating current models of pitch and time perception.

^ BACK TO SCHEDULE ^

Talk Session 4 (2:40-3:40)

2:40 **4A. Speeding Up and Slowing Down in Group Synchronization Tasks**
Dobromir Dotov (University of Nebraska Omaha)

Humans are social animals who engage in a variety of activities requiring coordinated action. Social interaction in rhythmic tasks has become an important topic of research in the past decades. A frequent observation in this domain is that individuals trying to synchronize their tapping tend to speed up spontaneously along the length of the trial. This phenomenon has motivated theoretical models designed to explain phase correction over successive taps. The majority of empirical work, however, has been based on synchronization tasks with discrete actions such as finger tapping. In real-world action, continuous movement and continuous coordination are commonplace. Here we review past work and report novel data to compare how the temporal nature of the coupling affects tempo in group synchronization. We also compare visual and auditory paradigms. The converging evidence suggests that speeding up is specific to discrete tapping, not to mutual synchronization or to auditory-motor synchronization. We conclude that modeling social rhythmic coordination needs to take into account the biomechanical constraints and affordances created by the task space.

^ BACK TO SCHEDULE ^

3:00 **3A. A Temporal Correlation Model for Rhythmic Expectancy**
Peter Cariani (Boston University)

Any repeating temporal pattern of musical events, metrical or not, groups the events (temporal grouping) and creates an expectancy of its continuation (rhythmic pattern induction). A groove is created with a repetition period equal to the duration of the repeating pattern (the fundamental period of the event sequence, not unlike pitch). A mismatch negativity response (MMN) is generated in neural auditory evoked potentials when subsequent patterns of event auditory attributes and timings contrast with previous ones, suggesting a possible basis in temporal pattern memory traces, stored in reverberating echoic memory delay paths, that are cross-correlated with incoming event patterns.

I have proposed recurrent neural timing nets (RTNs) with arrays of delay loops/paths and coincidence detectors that compare incoming temporal patterns of pulses (temporal coding of rhythmic pattern) with temporal memory traces circulating in delay loops. My current RTN model dynamically weights the output of coincidence units according to their recent predictive efficacy (temporal correlations between current and delayed inputs over the last two delay periods). The expected value of the network at any given time is the sum of the weighted correlations from all of the delay loops. This expectancy is dominated by contributions from the subset of delay loops with high recent predictive value, such that the network will differentially amplify any repeating patterns present and incorporate them into the expectancy. One can regard this in terms of an autocorrelation-like temporal prediction mechanism (not unlike linear predictive coding) or a network of adaptive pulse-pattern oscillators.

This qualitative model behaves in a manner similar to rhythmic pattern induction, temporal grouping, and metrical induction (filling missing beats). The dominant periodicity and the repeating event pattern is present in the most highly facilitated delay loops (corresponding to the event repetition period and its multiples), and the network rapidly recovers when a rhythmic pattern discontinuity is presented. Computing the difference between the input signal and the network's expectancy (prediction error) produces MMN-like response patterns for event timing deviations.

An isochronous series of the same events can be heard in multiple ways, according to the grouping of events (in 1's, 2's, 3's). Events that are accented by auditory contrasts (Δ loudness, Δ pitch, Δ timbre, etc.), strongly bias the grouping. If events are encoded by post-onset pulse latency patterns characteristic of these attributes (complex spike latency code), then the RTN will produce mismatches whenever event attributes change. This causes the network to group accordingly, such that dominant delay loops carry the current longest repeating event pattern and its multiples. Possible future modifications include short and long-term memory compartments.

^ BACK TO SCHEDULE ^

Talk Session 5 (3:50-4:50)

3:50 **5A. A Recurrent Neural Network for Rhythmic Timing**
Klavdia Zemlianova (New York University)

Regardless of cultural background, humans can effortlessly recognize and synchronize with musical rhythm. Despite music's omnipresence in our world, the specific neural mechanisms responsible for our capacity to perceive and anticipate temporal patterns in music have yet to be fully understood. Motivated by the recent success of recurrent neural network (RNN) to elucidate possible neural structures underlying cognitive and motor tasks1–3, we explore if such an approach can identify key computational elements of the synchronization and continuation task (SCT) - a standard task in rhythmic timing experiments where subjects are asked to synchronize their finger taps to the stimulus and then continue tapping at the same rate in the absence of a stimulus. We simultaneously train a biologically constrained RNN on six different stimulus tempos of the SCT task and ask if it recapitulates key neuronal dynamics observed in experiments, namely: sequential activity that spans the inter-tap-interval (ITI), circular trajectories in PCA space, and neuronal trajectories that recapitulate weber's law. We find that the population shows qualitatively circular trajectories in PCA space, demonstrates weak sequential firing patterns but fails to account for Weber's law. Finally, we evaluate the model during changes in tempo - another highly pertinent context for music perception and production. We observed that the model shows smooth and near instantaneous transitions during tempo changes – behaviors that are not in agreement with experimental data5. Taken together, we suggest that rhythmic timing tasks require specialized neural circuits and that RNNs require additional constraints to replicate these behaviors.

1. Russo, A. A. et al. Motor Cortex Embeds Muscle-like Commands in an Article Motor Cortex Embeds Muscle-like Commands in an Untangled Population Response. *Neuron* 97, 953-966.e8 (2018).
2. Mante, V., Sussillo, D., Shenoy, K. V. & Newsome, W. T. Context-dependent computation by recurrent dynamics in prefrontal cortex. *Nat.* 2013 5037474 503, 78–84 (2013).
3. Goudar, V. & Buonomano, D. V. Encoding sensory and motor patterns as time-invariant trajectories in recurrent neural networks. *Elife* 7, (2018).
4. Gámez, J., Mendoza, G., Prado, L., Betancourt, A. & Merchant, H. The amplitude in periodic neural state trajectories underlies the tempo of rhythmic tapping. *PLoS Biol.* 17, e3000054 (2019).
5. Repp, B. H. Sensorimotor synchronization: A review of the tapping literature. *Psychonomic Bulletin and Review* 12, 969–992 (2005).

^ BACK TO SCHEDULE ^

4:10 **5B. Timing and Time-Warping in a Complex Motor Task: Cracking a Bullwhip**

Aleksei Krotov, Marta Russo, Mohsen Sadeghi, Reza Sharif Razavian, & Dagmar Sternad (Northeastern University)

Humans interact with complex objects on a daily basis, for example, carrying a bowl full of soup, tying shoelaces, or making the bed. Motor neuroscience has suggested that humans rely on internal representation of object dynamics when planning and executing movements, but that suggestion is based on carefully constrained experimental paradigms where humans only move their hand without an object or, minimally, with a rigid object. Objects that exhibit internal dynamics, such as a cup of coffee, have been outside the purview of study. The critical issue is that due to the rich interactive dynamics and noise in the human sensorimotor system, movement variability abounds. Such variability has been typically assessed in some movement variables via discrete-point estimates of amplitude or time of salient landmarks, and repeated signals have been summarized via time-normalizing and averaging. While the first approach ignores variability throughout continuous movement, the second approach is prone to blurring subtle features of interest.

In the first part of my talk, I will share our new paradigm to study complex object manipulation: controlling a bullwhip to strike a target. Using motion capture, we identified regularities in the whip movement and its initial configurations. These regularities suggest that humans steer the whip dynamics towards simpler, more tractable, regimes. Even movements in the intermittent (discrete) version of the task showed some rhythmicity. The richness of dynamics of coupled oscillators might contribute to the human skill of handling complex objects.

In the second part of the talk, I will address temporal variability over repeated performances via using time-warping alignment. That approach, adopted from theoretical statistics and speech perception, allowed to decouple variability into spatial and temporal domains and provided a more detailed quantification of their contribution to the resulting movement. This method may also reflect that temporal evolution in humans is not linear when executing coordinated movements.

^ BACK TO SCHEDULE ^

Local Arrangements

Technology

A projector will be available with HDMI and VGA/Aux inputs. Please bring any dongles!

WIFI is available via the UConn-Guest network or EDUROAM network.

A **Zoom** link for virtual presentations is available **here**. Presenters will be asked to share their slides during their presentations.

Venue

University of Connecticut Zachs Family Fine Arts Administration Building
Room ZFA 103

Address: Fine Arts Complex, 1295 Storrs Rd, Storrs, CT 06269

Evening cocktails & dinner will occur at Ed Large's home

Parking

Free Saturday parking is available in the following lots:

- Fine Arts Lot 1
- Lot S
- Area 2 Parking behind Buckley Residence Hall

Handicap Parking is available in Fine Arts Lot 1

Due to UConn Bound Day, parking may be limited. Other parking venues can be found on UConn's parking map (ArcGis interactive, PDF). Please make sure **not** to park in spots marked as restricted or limited: you WILL get a ticket!

Special Needs

Accessible and gender-inclusive restrooms are available on the 2nd floor of the fine arts building (more info coming soon)

If you need a lactation room, please let us know at the registration desk and we will set one up for you.

Food & Refreshments

Registration costs will cover breakfast, lunch, and dinner.

If you need to purchase your own meals, a few restaurants within walking distance offer vegan/vegetarian, gluten free, and other options. Here are some of our favorites (links go to Google maps):

- Dog Lane Cafe (Vegetarian, GF options)
- Kathmandu Kitchen & Bar (Vegan/vegetarian options)
- Little Aladdin Mediterranean (Halal, vegetarian options)
- Moe's Southwestern Grill (Vegan/vegetarian, GF options)

A CVS pharmacy and Price Chopper are also available within walking distance.

COVID-19

UConn is committed to mitigating COVID-19 and other infectious disease spread. As such, we ask that each NEST guest monitors their health - Please do not attend in-person if you are experiencing any COVID-19 symptoms.

Currently UConn does not require physical distancing or masking. The University supports the wearing of masks by our community. More information on UConn's campus guidelines can be found here.

If you wish to eat in an isolated area, please let us know and we can help find somewhere comfortable for you to eat.

^ BACK TO SCHEDULE ^

Acknowledgements

UConn Music Dynamics Lab

PI: Dr. Ed Large

Conference Organization/Programming/Communications:

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^ BACK TO SCHEDULE ^