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We acknowledge that the University of British Columbia-Vancouver is situated on the unceded territory of the Musqueam First Nation, and that UBC-Vancouver and -Okanagan are situated on the traditional territories of the Musqueam, Squamish, Tsleil-Waututh, and Okanagan First Nations.

Nous reconnaissons que l'Université de la Colombie-Britannique-Vancouver est située sur le territoire sans précédent de la Première nation de Musqueam et que l'UBC-Vancouver et -Okanagan sont situés sur les territoires traditionnels des Premières nations de Musqueam, Squamish, Tsleil-Waututh et Okanagan .





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UBC School of Music





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UBC School of Music

Conservatory modeled program

Five major areas of study

- **Performance**
- **Composition**
- **Theory**
- **Musicology**
- **Ethnomusicology**





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Composition

- **Undergraduate, Masters, Doctorate**
- **Usually 12 undergraduates, 12 graduates**
- **Many students have an interest in music technology**



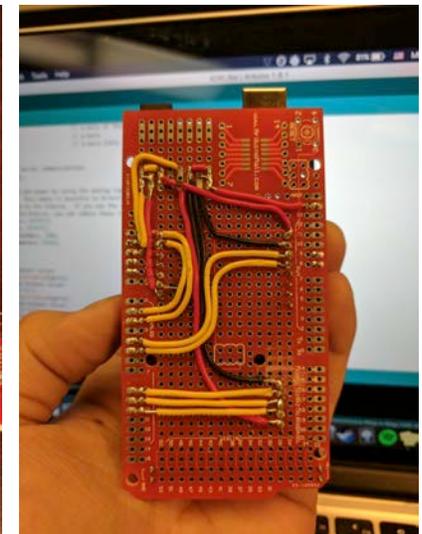


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Music Technology

- **Undergraduate minor: 24 credits, 4 years**
- **Composition, programming, synthesis theory, performance**
- **4th year capstone project (hardware/software)**



Music Theory

- Significant work in post tonal analysis and rhythm
- Perception of rhythm and polymeter

○ = 90+ pulse
 ○ = Rogue pulse
 * = Rogue pulse

♩ = 96

17 ♩ = MM 23

23 ♩⁵ = MM 21

Piano

p *mp* *p* *mf* *mp* *(p)* *mf*

mf *f*

16 ♩³ 16 ♩³

16 ♩³ = MM 18

Detailed description: This image shows a piano score with two staves (treble and bass clef) and a grand staff bracket labeled 'Piano'. The music is in 4/4 time. Above the score, there are several annotations: a tempo marking '♩ = 96', a measure bracket labeled '17 ♩ = MM 23', and another measure bracket labeled '23 ♩⁵ = MM 21'. Below the score, there are two more measure brackets labeled '16 ♩³' and '16 ♩³ = MM 18'. The score includes various dynamics such as *p*, *mp*, *mf*, and *f*. There are also asterisks (*) and circled notes indicating 'Rogue pulses'. The notation includes eighth notes, quarter notes, and half notes, with some notes beamed together. There are also some circled notes and numbers in parentheses like (1) and (2).



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Facilities of interest

- **Computer Music Studio**





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Facilities of interest

- **ICICS Sound Studio**





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Facilities of interest

- **Roy Barnett Recital Hall**





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Facilities of interest

- **Chan Centre for the Arts**





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ACTOR-affiliated Personnel

Music technology, composition, orchestration

Keith Hamel



Bob Pritchard





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ACTOR-affiliated Personnel

Composition, orchestration
Dorothy Chang



Orchestral conducting
Jonathan Girard





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ACTOR-affiliated Personnel

Music theory, cognition
Richard Kurth



Ève Poudrier





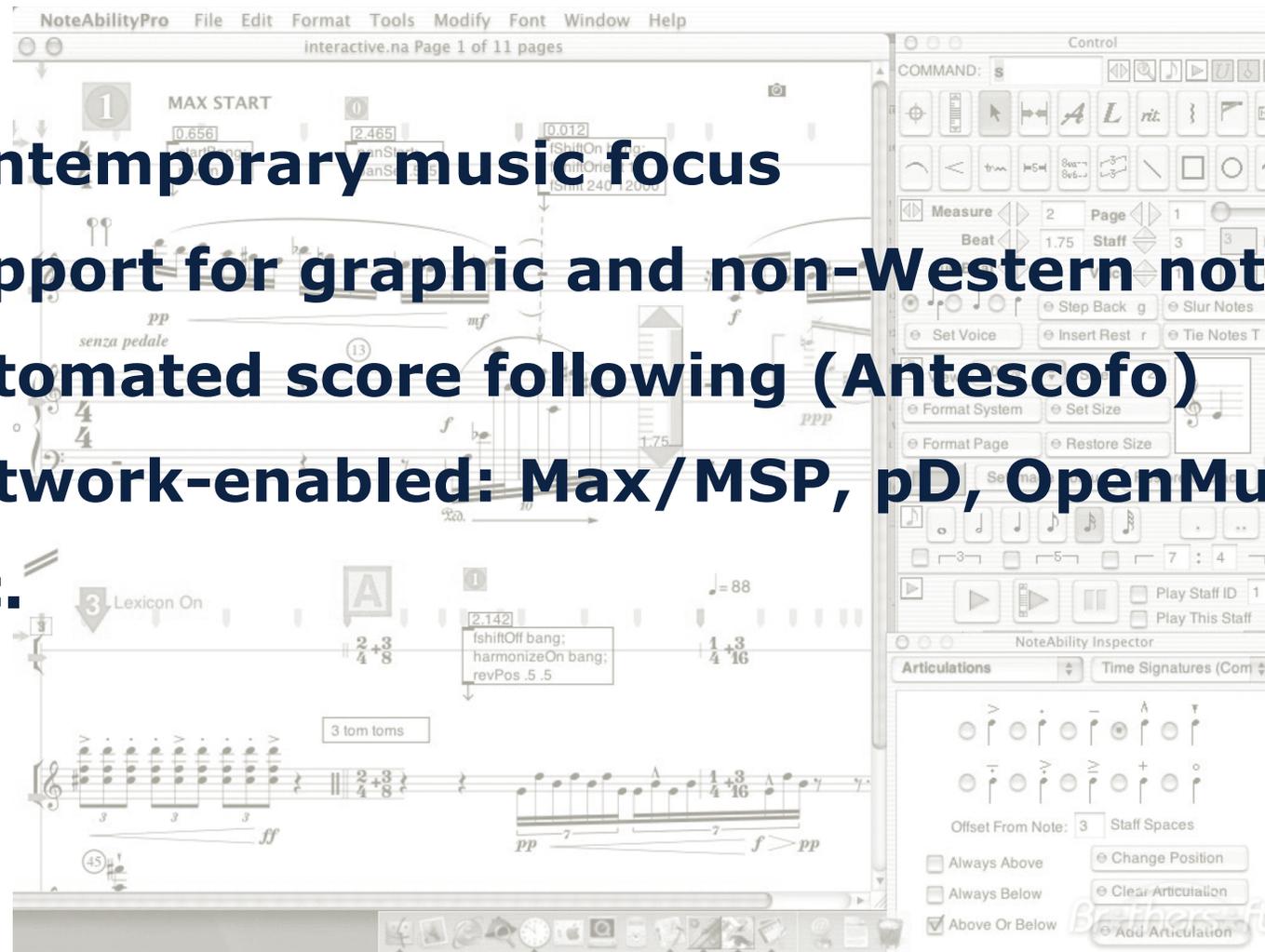
Research Interests: Notation: NoteAbilityPro

The screenshot displays the NoteAbilityPro interface with a musical score and a control panel. The score is in 4/4 time and features dynamic markings such as *pp*, *mf*, *f*, and *ppp*. Annotations include a blue circle '1' labeled 'MAX START' with a box containing 'startBang; revOn' and a time value of 0.656. Another annotation is a blue circle '0' with 'panStart; panSet .5 .5' and a time value of 2.465. A third annotation is a blue circle '0' with 'fShiftOn bang; fShiftOrient 1; fShift 240 12000' and a time value of 0.012. A red arrow '3' labeled 'Lexicon On' points to a measure with a time signature change to 2/4 + 3/8. A purple square 'A' is placed above a measure with a time signature change to 1/4 + 3/16. A blue circle '1' is placed above a measure with a time signature change to 1/4 + 3/16. A box labeled '3 lom loms' is placed above a triplet of notes. A vertical slider is positioned at 1.75. The control panel on the right includes a COMMAND field with 's', various navigation icons, and a NoteAbility Inspector section with articulation options like 'Always Above', 'Always Below', and 'Above Or Below'. A 'Brothersoft' watermark is visible in the bottom right corner.



Research Interests: Notation: NoteAbilityPro

- Contemporary music focus
- Support for graphic and non-Western notation
- Automated score following (Antescofo)
- Network-enabled: Max/MSP, pD, OpenMusic, etc.





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Research Interests: Automated score following

The image displays a complex software interface for automated score following, overlaid on a video of a violinist performing. The interface is divided into several functional areas:

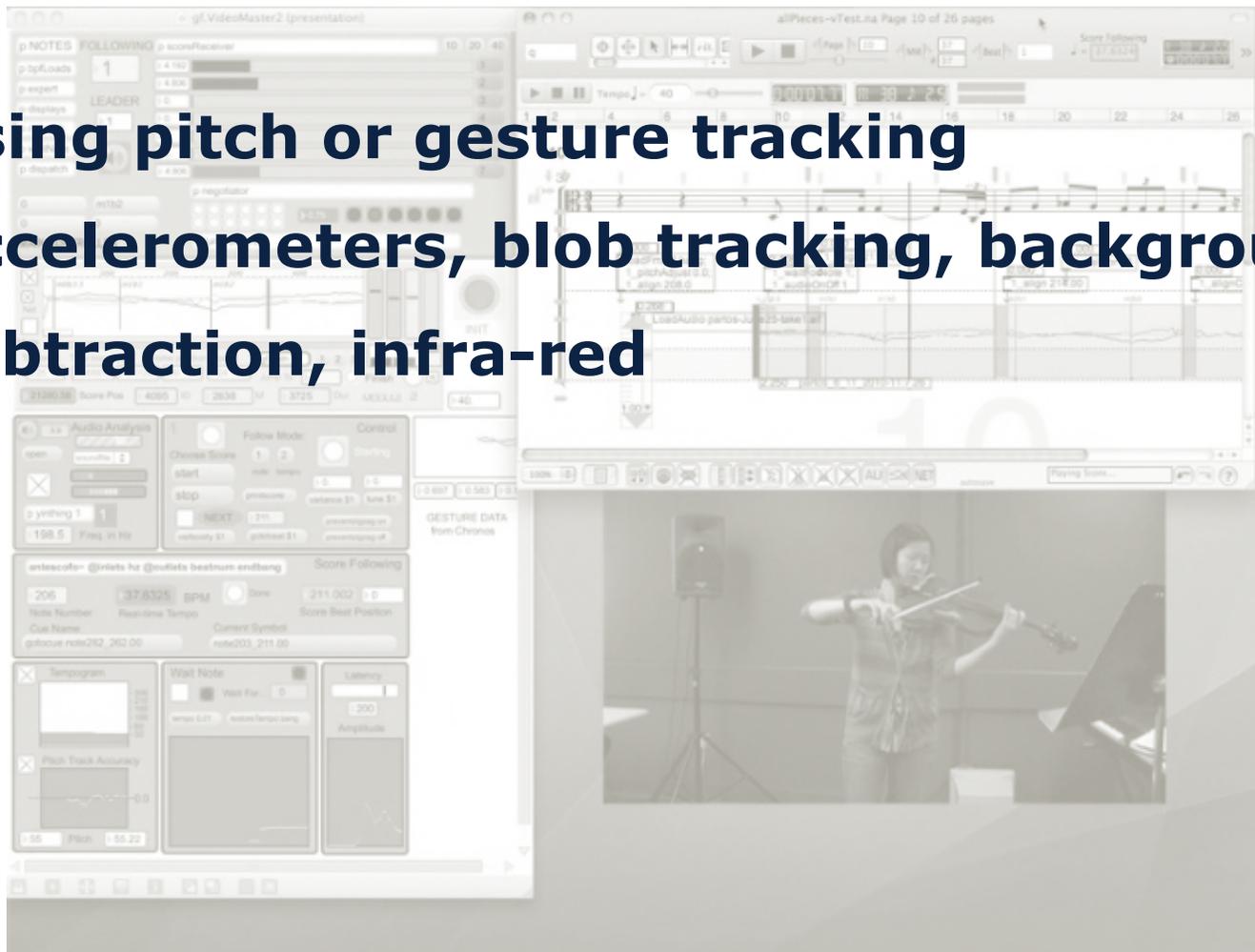
- Top Left:** A list of parameters for a 'p NOTES FOLLOWING' system, including 'p tpfLoads', 'p expert', 'p displays', 'p network', 'p waitNote', 'p dispatch', 'p negotiator', and 'p pumpControl'. A 'MAIN CONTROLLER' section below this includes a 'pnt' button and various control knobs.
- Top Right:** A 'Score Following' window showing a musical score with a timeline from 0 to 26. It features a tempo of 40 and a score position of 17.8324. The score includes annotations like 'load/mid bang', 'pitchAdjust 0.0', 'waitOnOff 1', and 'align 208.0'.
- Bottom Left:** An 'Audio Analysis' section with 'Follow Mode' controls (Start, Stop, Next) and a 'Score Following' status window. The status window shows 'Note Number: 206', 'Real-time Tempo: 37.8325 BPM', and 'Score Best Position: 311.002'. It also displays 'Due Name: gttocue rdx202_262.00' and 'Current Symbol: rdx203_211.00'.
- Bottom Center/Right:** A 'Tempogram' and 'Pitch Track Accuracy' section with various graphs and controls. A 'Wait Note' section is also visible.

The background video shows a violinist in a green shirt performing in a studio setting with a red wall and a black piano.



Research Interests: Automated score following

- Using pitch or gesture tracking
- Accelerometers, blob tracking, background subtraction, infra-red

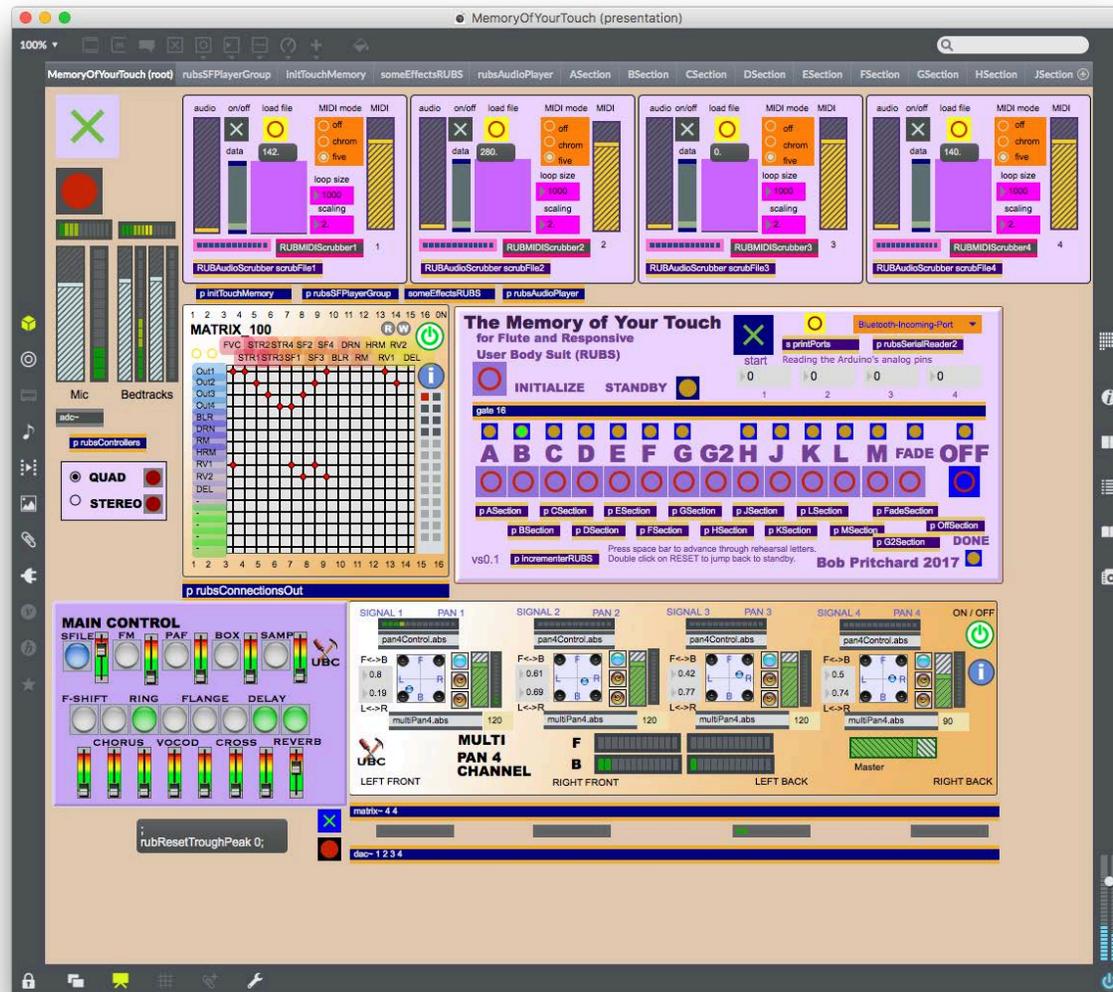




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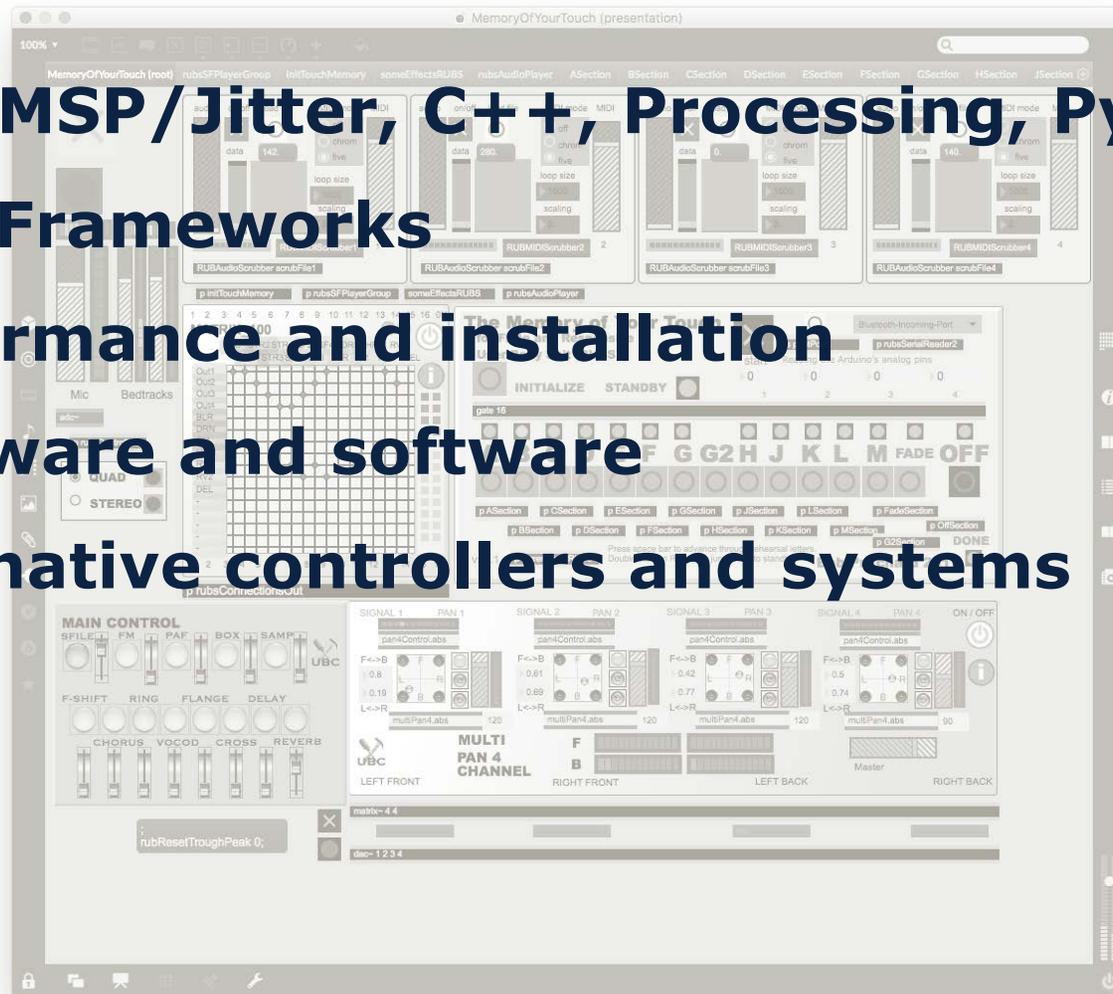
Research Interests: Interactive/responsive environments





Research Interests: Interactive/responsive environments

- **Max/MSP/Jitter, C++, Processing, Python, OpenFrameworks**
- **Performance and installation**
- **Hardware and software**
- **Alternative controllers and systems**





Research Interests: Interactive/responsive environments

- **NoteAbilityPro and remote messaging**
- **Blending of acoustic and electroacoustic/processed sources**
- **Realtime video control/processing**
- **Spatialization**





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Research Interests: Interactive video





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Research Interests: Interactive video

- **Controlled with gesture tracking, Kinects, alternative controllers**
- **Affects triggering, speed, processing, content**





Research Interests: Spatialization

SIG 1 PAN 1 SIG 2 PAN 2 SIG 3 PAN 3 SIG 4 PAN 4 SIG 5 PAN 5 SIG 6 PAN 6 ON/OFF

vbap16Control.abs pan16Control

Top F<->B 0.5 L R B

Bot L<->R 0

vbapPan16.abs

vbap16Control.abs pan16Control

Top F<->B 0.5 L R B

Bot L<->R 0

vbapPan16.abs

vbap16Control.abs pan16Control

Top F<->B 0.5 L R B

Bot L<->R 0

vbapPan16.abs

vbap16Control.abs pan16Control

Top F<->B 0.5 L R B

Bot L<->R 0

vbapPan16.abs

vbap16Control.abs pan16Control

Top F<->B 0.5 L R B

Bot L<->R 0

vbapPan16.abs

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

11 3 12 4 13 5 14 6 15 7 16 8 9 10 11 12 13 14 15 16

UBC

**MULTIPAN
VBAP-16
CHANNEL**

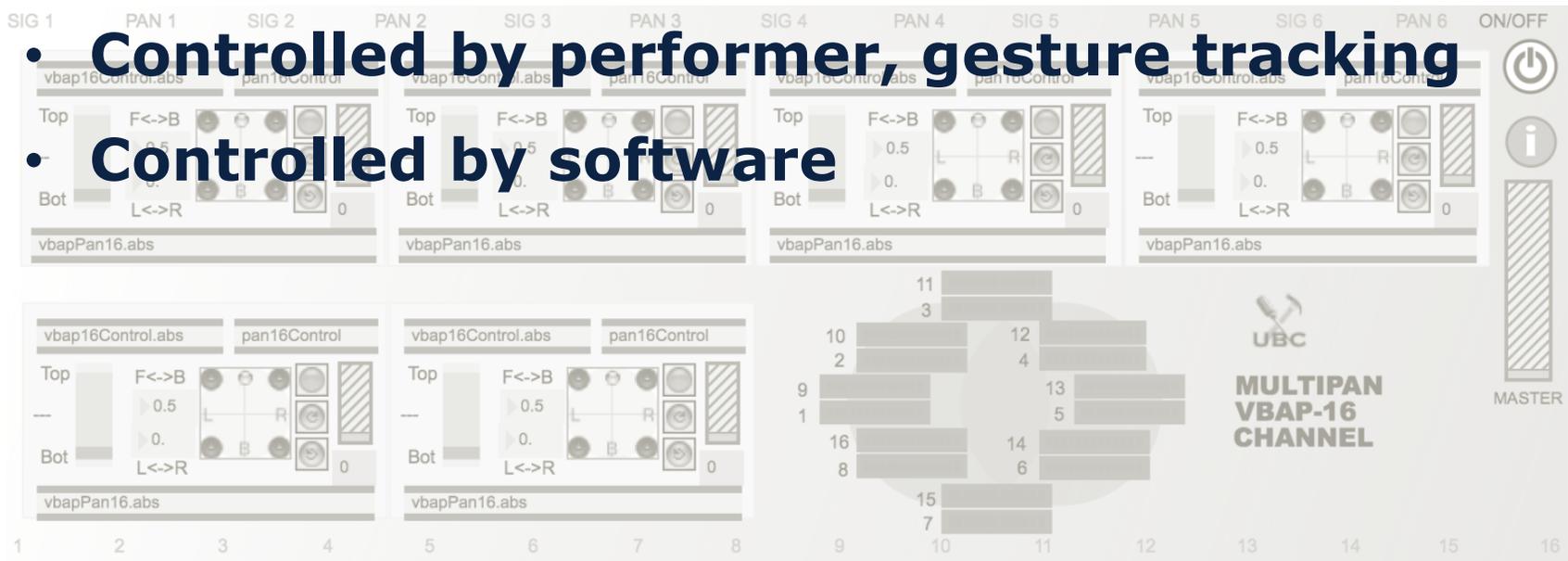
MASTER



Research Interests: Spatialization

- 2, 4, 8, 16 channel systems

- **Controlled by performer, gesture tracking**
- **Controlled by software**





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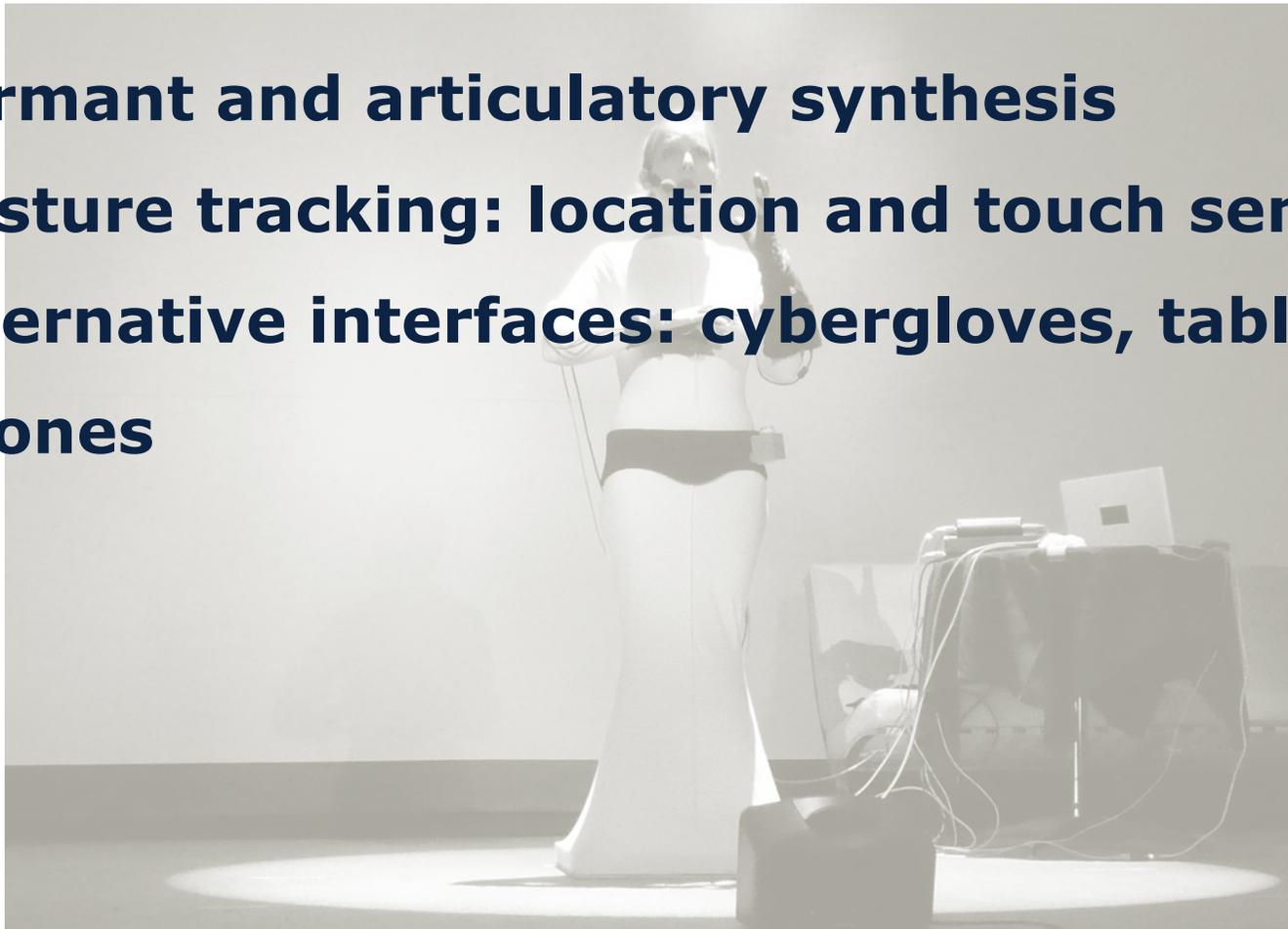
Research Interests: Gesture-controlled speech synthesis





Research Interests: Gesture-controlled speech synthesis

- **Formant and articulatory synthesis**
- **Gesture tracking: location and touch sensing**
- **Alternative interfaces: cybergloves, tablets, phones**





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Research Interests: Spectral analysis for composition





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Research Interests: Spectral analysis for composition

- **Analysis for compositional structure and processes**
- **Analysis for timbral development**
- **Analysis for notation purposes**





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Research Interests: Responsive User Body Suits (RUBS)





Research Interests: Responsive User Body Suits (RUBS)

- **On-body sensors for control of audio/video**
- **Used for music and dance**
- **Playable by multiple performers**





Possible areas of contribution to ACTOR

- **Realtime notation and messaging (performance, spectral analysis)**
- **Interchange and messaging protocols between software components**
- **Development of interactive performance environments**
- **Explorations with acoustic/electroacoustic ensembles**
- **Technology-assisted orchestration pedagogy**



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