

\\ Nolze //

Personalized Nolze Filter

Peggy Sylopp, Aislyn Rose
<https://github.com/pgys/Nolze/>

Funded by Prototypefund 2019

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Personalized Nolze Filter

Motivation

Motivation

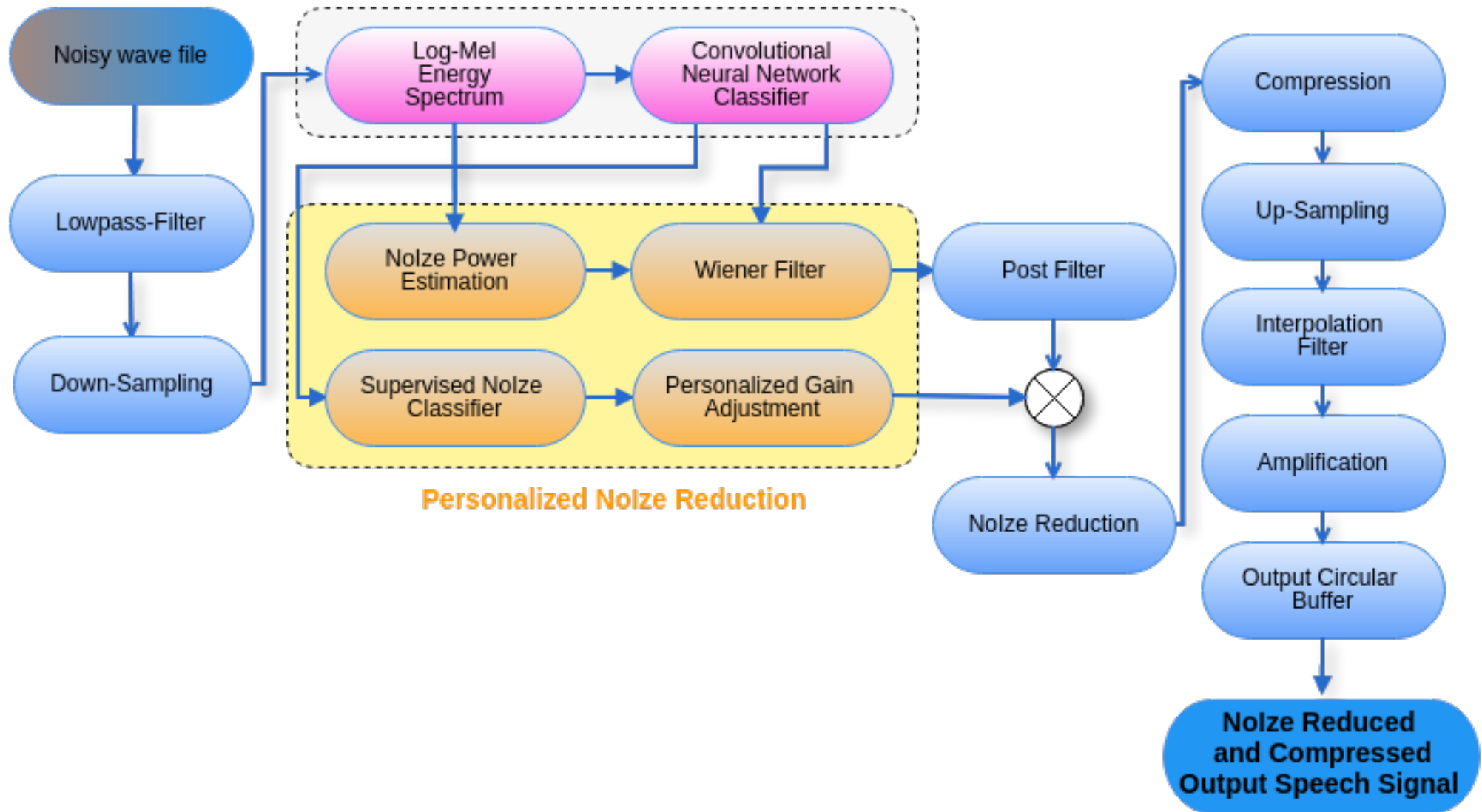
- Optimization of Speech Listening Effort in Challenging Sound Environments
- Personal Motivation: Mildly hearing loss of Peggy
- Aim: Personal Sound Reduction App Running on a conventional Android Smartphone

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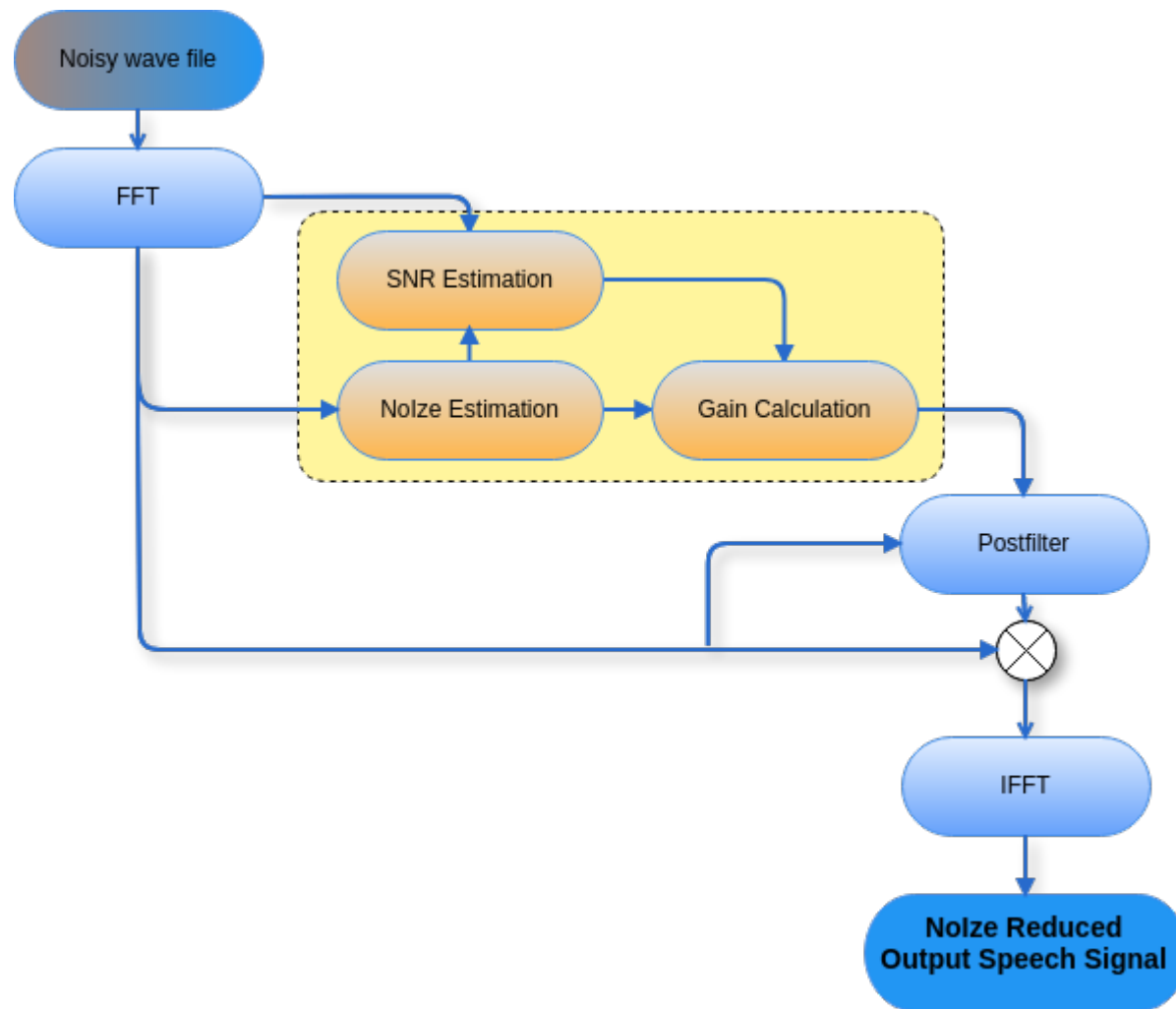
Processing Pipelines

Block diagram of personalized reduction speech processing pipeline.

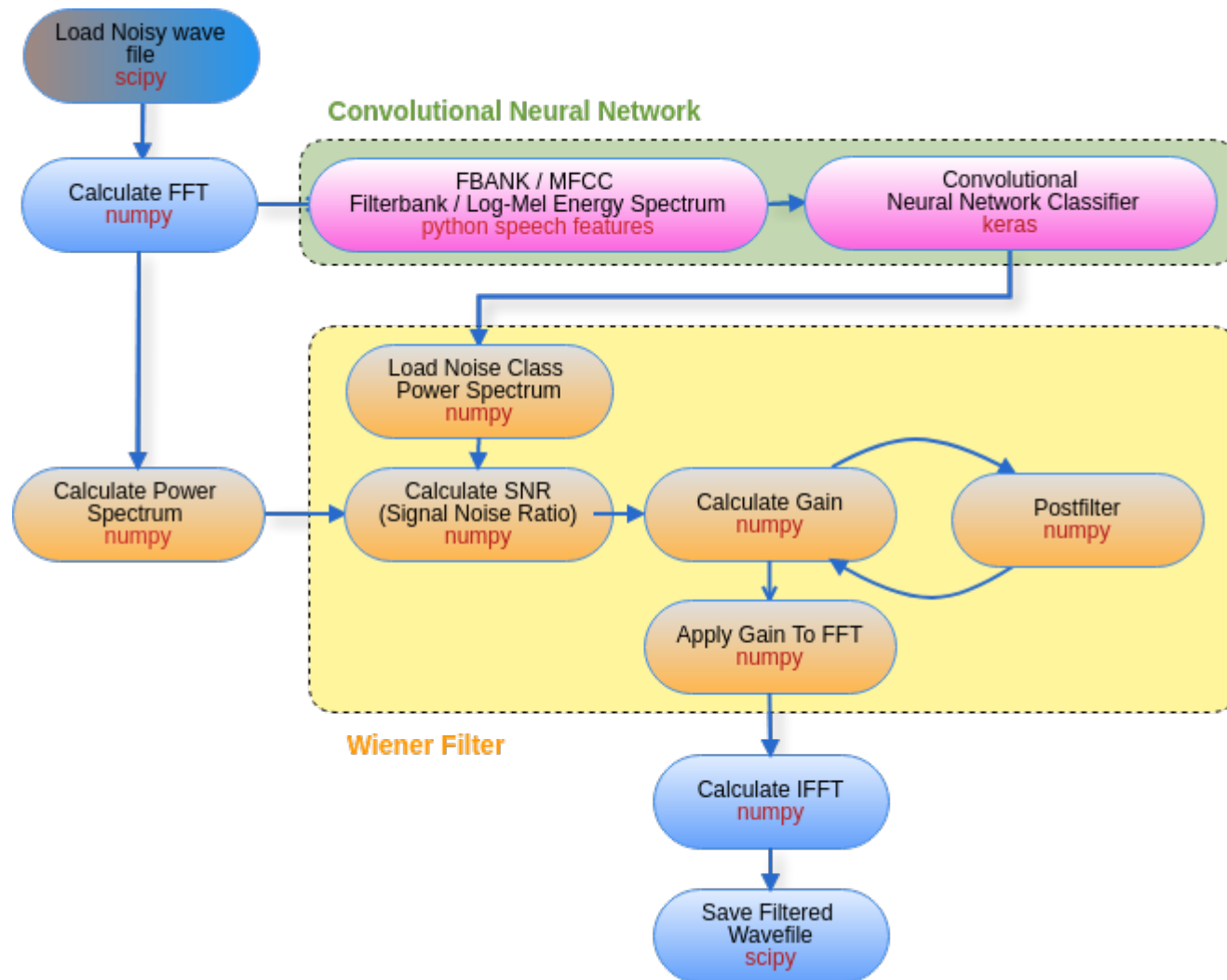


Inspired by source: A Real-Time Personalized Noise Reduction Smartphone App for Hearing Enhancement, Nasim Alamdari, Shashank Yaraganalu, Nasser Kehtarnava, Department of Electrical & Computer Engineering, University of Texas at Dallas, Richardson, TX, USA, 2018

Block diagram of a conventional noise reduction system with postfilter



Block diagram of the \\\ Nolze // processing pipeline

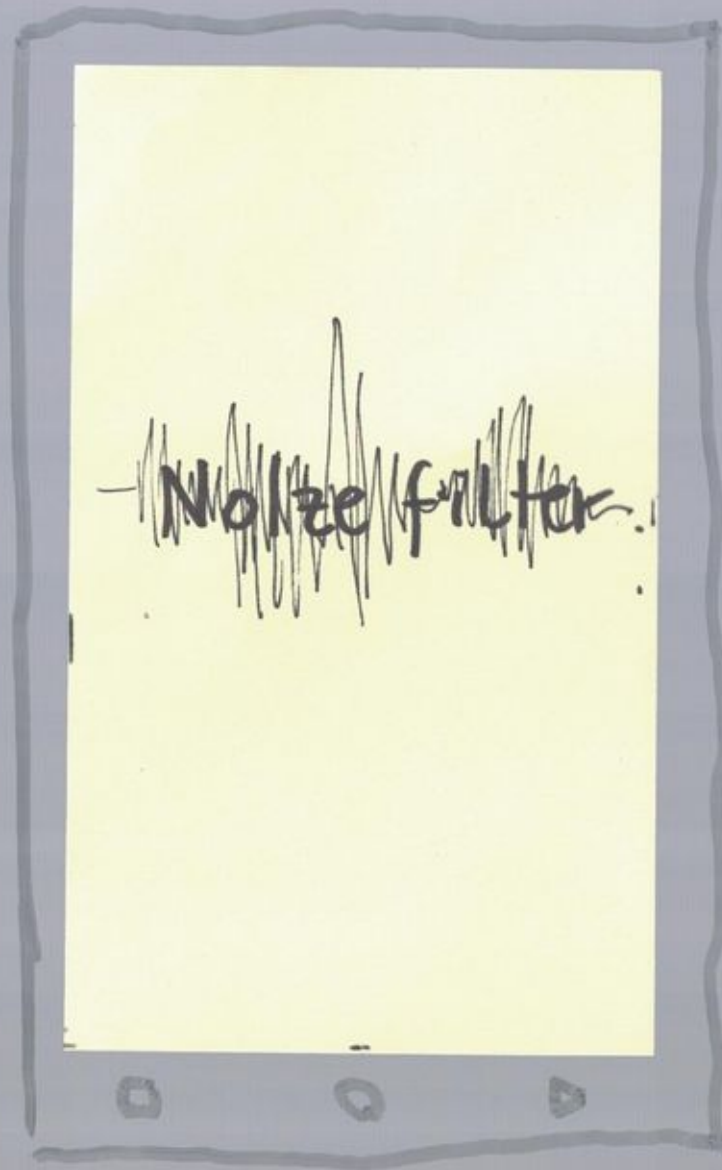


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APP

GUI Simulation



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file

real time

community

Air Condition

Tram

Train

Bus

⋮

New Filter

Air Condition 1

delete

new AirCondition

fine tuning

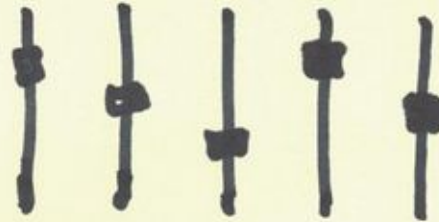


back



mute

Air Condition 1



64hz

51hz



save

Air Condition 1

delete

new AirCondition

fine tuning



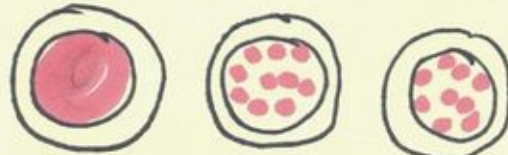
back



mute

Air Condition 2

record 3 files
for training



1 2 3



generate filter

now



Later



Air Condition 1

Air Condition 2

Tram

Train

BUS

⋮

New Filter

file

real time

Community



choose
filter :

▶ cloud online

▷ my filters

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Future Visions

Future Visions

- Delay optimization
- Pilot project for real life application as App
- Cloud for sharing sound data bases and filter presets
- High accessibility of the knowledge for everyone with internet
- Many, many Contributors :)

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Meet Us

Workshop Meetup @PyLadies Berlin, 10.09.2019

„Python for Noise filters and History“

<https://notebooks.ai/a-n-rose/>

Talk @PyCon Berlin, 11.10.2019

„Take control of your hearing: Accessible methods to build a smart noise filter“

<https://pretalx.com/pyconde-pydata-berlin-2019/talk/>

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Sources which inspired us (some of them)

A Real-Time Personalized Noise Reduction Smartphone App for Hearing Enhancement, Nasim Alamdari, Shashank Yaraganalu, Nasser Kehtarnava, Department of Electrical & Computer Engineering, University of Texas at Dallas, Richardson, TX, USA, 2018

Efficient Musical Noise Suppression for Speech Enhancement Systems, Thomas Esch and Peter Vary, Institute of Communication Systems and Data Processing, RWTH Aachen University, Germany, 2009

Speech Enhancement based on a priori signal to noise estimation, Pascal Scalart, Jozue Vieira Filho, France Telecom - CNEiT/LAA/TSS/CMC, 2 Avenue Pierre Marzin 22307 Lannion Cedex, France, Universidade Estadual Paulista DEE/FBIS/UNESP, Av. B r a d Centro 56, Ilha solteira- SP, Brazil, Universidade Estadual de Campinas (DECOM/FBE/UNICAMP), SP, 1996 IEEE

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Thank you for your attention!

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