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<p>(51) International classification :G06N0003040000, G10L0021020800, G06N0003080000, G10L0025300000, G10L0025180000</p> <p>(86) International Application No :NA Filing Date :NA</p> <p>(87) International Publication No : NA</p> <p>(61) Patent of Addition to Application Number :NA Filing Date :NA</p> <p>(62) Divisional to Application Number :NA Filing Date :NA</p>	<p>(71)Name of Applicant : 1)Dr. Manaswini Burra Address of Applicant :Associate Professor, Dept. of Computer Science & Engineering, Lakireddy Bali Reddy College of Engineering (Autonomous), Mylavaram, Krishna Dt, Andhra Pradesh, India Pin - 521230 ----- 2)Dr. Sunnydayal. V 3)Dr. N.V. Rajasekhar 4)Dr. Ravi Kumar.K Name of Applicant : NA Address of Applicant : NA</p> <p>(72)Name of Inventor : 1)Dr. Manaswini Burra Address of Applicant :Associate Professor, Dept. of Computer Science & Engineering, Lakireddy Bali Reddy College of Engineering (Autonomous), Mylavaram, Krishna Dt, Andhra Pradesh, India Pin - 521230 ----- 2)Dr. Sunnydayal. V Address of Applicant :Associate Professor, School of Electronics, VIT-AP University, Vijayawada, Andhra Pradesh, India Pin – 522237 ----- 3)Dr. N.V. Rajasekhar Address of Applicant :Associate Professor, School of Electronics, VIT-AP University, Vijayawada, Andhra Pradesh, India Pin – 522237. ----- 4)Dr. Ravi Kumar.K Address of Applicant :Associate Professor, Dept. of Electronics and Communication Engineering, Lakireddy Bali Reddy College of Engineering (Autonomous), Mylavaram, Krishna Dt, Andhra Pradesh, India Pin - 521230 -----</p>
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(57) Abstract :

A novel feature-specific convolutional Gated linear Unit-Feature specific attention based GRU neural network (ConvGLU-FSCA-GRUNet) for real-time speech enhancement is proposed. Complex spectral mapping aims to estimate the real and imaginary spectrograms of clean speech from noisy speech, which simultaneously enhances magnitude and phase responses of speech. Inspired by multi-task learning, we propose a gated convolutional recurrent network (GCRN) for complex spectral mapping, which amounts to a causal system for monaural speech enhancement. The complex spectral mapping with the proposed ConvGLU-FSCA-GRUNet provides an effective phase estimate. The power of CNNs for speech modeling is limited because of the spatial-agnostic convolution kernels. In ConvGLU-FSCA-GRUNet, the encoder and decoder are adopted for forward and inverse feature space transformation, respectively. The denoising module based on the feature-specific convolution (FSC) is employed to enhance the generated deep features. Leveraging the long-term global contexts and considering the importance of each feature channel for speech modeling, the convolution kernels of FSC are dynamically parameterized in each time-frequency location. A function constrained loss is further proposed to train the ConvGLU-FSCA-GRUNet ensuring the encoder, denoising modules and decoder can function as expected.

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