DPD using Deep Learning

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# Astract

# Introduction

## Motivation - להעתיק

## Objective – מה רוצה לעשות: לשפר אי לינאריות בamam ampm out of band ammission

## contribution

# Literature review

## PA Model

Nonlinear effects – AM/AM, AM/PM, OOB emission

Volterra series as a PA model (MP)

Figures:

1. AM/AM

2. AM/PM

3. OOB emission/Spectrum before and after non-linearity

## DPD

Motivation

DPD classical architecture (direct/indirect)

Figures – block diagram of:

1. Direct
2. Indirect

## MSE

Problem formulation יש לנו את סיגנל המוצא ואנו רוצים למצוא מקדמים שימצאו מינימום שגיאה בינהם

Batch Solution הפתרון האנליטי

Iterative method – Gradient Descent הפתרון האיטרטיבי

## Neural Network

General Intro

Selected papers – PA and DPD

Figures

some block-diagrams of proposed architectures

# Metodology

Data (lab & simulation)

Steps towards solution (table from git)

# Results

## PA Modelling

Classical

NN

Figures (model fit):

Error

Convergence to solution

non-linear effects of the model (AM/AM, AM/PM, OOB emission)

## DPD

Classical

NN

Figures:

Error

Convergence to solution

# Discussion

Pros and Cons of each method, Insights on stuff (e.g. overfitting, gradient normalization, complex numbers …)

# Conclusion