Table 8.1: **The T2DM Sensitivity and Specificity of GCNs with Several Feature Schemes**

T2DM Sensitivity				
	Original	Normalized	Original Removal Edges	Normalized Removal Edges
Gene expression				
Netpro2vecMetgraphs	**1**	**1**	**1**	**0.721**
Netpro2vecNDD	**1**	**1**	0.993	0.787
Netpro2vecTM1	**1**	**1**	0.787	0.882
Netpro2vecTM2	**1**	**1**	0.882	0.529
Netpro2vecNDD+TM1	**1**	**1**	0.993	0.610
Netpro2vecNDD+TM1+TM2	**1**	**1**	0.771	0.809
Graph2Vec	**1**	**1**	**1**	**0.971**
GL2Vec	**1**	**1**	**1**	**1**
FeatherGraph	**0,944**	**0,944**	0.833	0.833

(a) **Sensitivity of the T2DM result in 400 patient's data within GCNs**

T2DM Specitivity				
	Original	Normalized	Original Removal Edges	Normalized Removal Edges
Gene expression				
Netpro2vecMetgraphs	**1**	**1**	**0.996**	**1**
Netpro2vecNDD	**1**	**1**	**1**	**0.996**
Netpro2vecTM1	**1**	**1**	**0.996**	**1**
Netpro2vecTM2	**1**	**1**	0.905	0.992
Netpro2vecNDD+TM1	**1**	**1**	**1**	**0.996**
Netpro2vecNDD+TM1+TM2	**1**	**1**	0.966	0.992
Graph2Vec	**1**	**1**	**1**	**0.989**
GL2Vec	**0.955**	**1**	**1**	**1**
FeatherGraph	**1**	**0.955**	0.943	0.992

(b) **Specitivity of the T2DM result in 400 patient's data within GCNs**

Table 8.2: The Non T2DM Sensitivity and Specificity of GCNs with Several Feature Schemes

Non T2DM Sensitivity				
	Original	Normalized	Original Removal Edges	Normalized Removal Edges
Gene expression				
Netpro2vecMetgraphs	**1**	**0.909**	0.924	0.902
Netpro2vecNDD	**1**	**0.909**	0.939	0.886
Netpro2vecTM1	**1**	**1**	0,871	0.909
Netpro2vecTM2	**1**	**1**	0,795	0.788
Netpro2vecNDD+TM1	**1**	**1**	0.909	0.909
Netpro2vecNDD+TM1+TM2	**1**	**1**	0.773	0.818
Graph2Vec	**1**	**1**	0.826	0.977
GL2Vec	**0.909**	**1**	0.856	0.992
FeatherGraph	**1**	**1**	0.902	0.977

(a) **Sensitivity of non T2DM result in 400 patient's data within GCNs**

Non T2DM Specitivity				
	Original	Normalized	Original Removal Edges	Normalized Removal Edges
Gene expression				
Netpro2vecMetgraphs	**1**	**1**	**1**	**0.970**
Netpro2vecNDD	**1**	**1**	**1**	**0.925**
Netpro2vecTM1	**1**	**1**	0.996	0.985
Netpro2vecTM2	**1**	**1**	0.989	0.977
Netpro2vecNDD+TM1	**1**	**1**	0.978	0.974
Netpro2vecNDD+TM1+TM2	**1**	**1**	0.978	0.993
Graph2Vec	**1**	**1**	**1**	**0.978**
GL2Vec	**1**	**1**	**1**	**1**
FeatherGraph	**1**	**0.966**	0.963	0.769

(b) **Specitivity of the non T2DM result in 400 patient's data within GCNs**

Table 8.3: **The Healthy Sensitivity and Specificity of GCNs with Several Feature Schemes**

Healthy Sensitivity				
	Original	**Normalized**	**Original Removal Edges**	**Normalized Removal Edges**
Gene expression				
Netpro2vecMetgraphs	**1**	**1**	**1**	**1**
Netpro2vecNDD	**1**	**1**	**1**	0.977
Netpro2vecTM1	**1**	**1**	0.992	0.992
Netpro2vecTM2	**0.909**	**1**	0.856	0.864
Netpro2vecNDD+TM1	**1**	**1**	0.985	0.970
Netpro2vecNDD+TM1+TM2	**0.818**	**1**	0.939	0.917
Graph2Vec	**1**	**1**	**1**	0.864
GL2Vec	**1**	**1**	**1**	**1**
FeatherGraph	**0,909**	**0.909**	0.909	0.727

(a) Sensitivity of the healthy result in 400 patient's data within GCNs

Healthy Specitivity				
	Original	**Normalized**	**Original Removal Edges**	**Normalized Removal Edges**
Gene expression				
Netpro2vecMetgraphs	**1**	**0.966**	0.966	0.925
Netpro2vecNDD	**1**	**1**	0.996	0.873
Netpro2vecTM1	**1**	**1**	0.907	0.881
Netpro2vecTM2	**1**	**1**	0.892	0.966
Netpro2vecNDD+TM1	**1**	**1**	0.970	0.769
Netpro2vecNDD+TM1+TM2	**1**	**1**	0.955	0.828
Graph2Vec	**1**	**1**	0.981	0.929
GL2Vec	**1**	**1**	**1**	**1**
FeatherGraph	**1**	**0.966**	0.965	0.993

(b) Specitivity of the healthy result in 400 patient's data within GCNs

1 ROC Charts for GCNs with the Original Features

1.1 T2DM
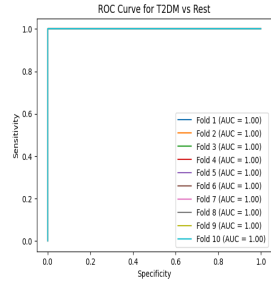
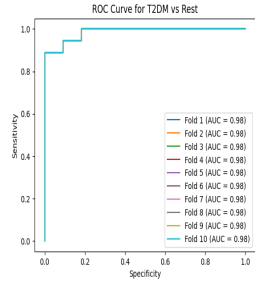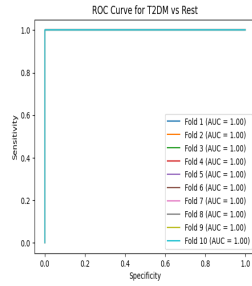(a) Netpro2vecMetgraphs   (b) Netpro2vecNDD   (c) Netpro2vecTMI   (d) Netpro2vecTM2   (e) Netpro2vecNDD+TM1
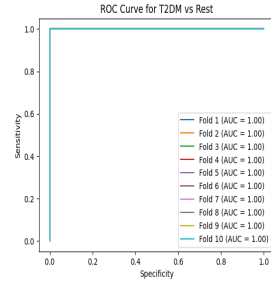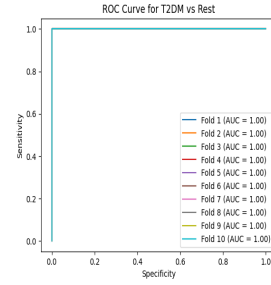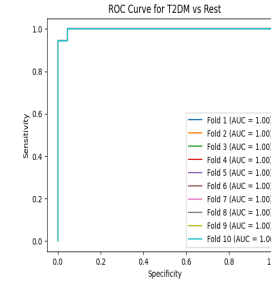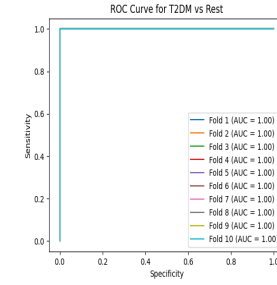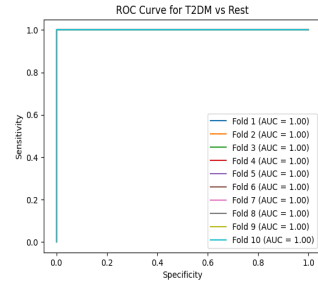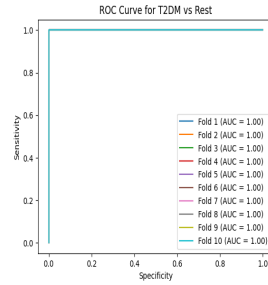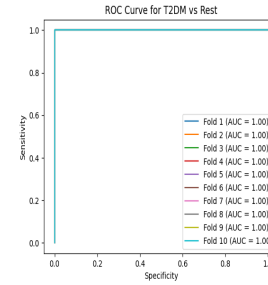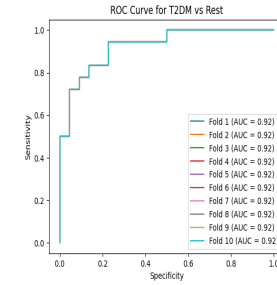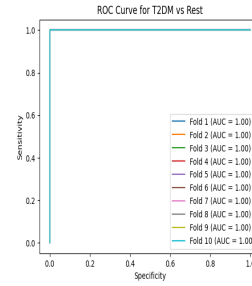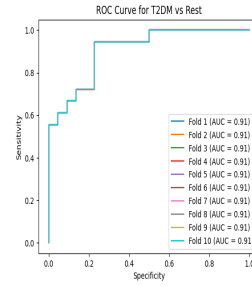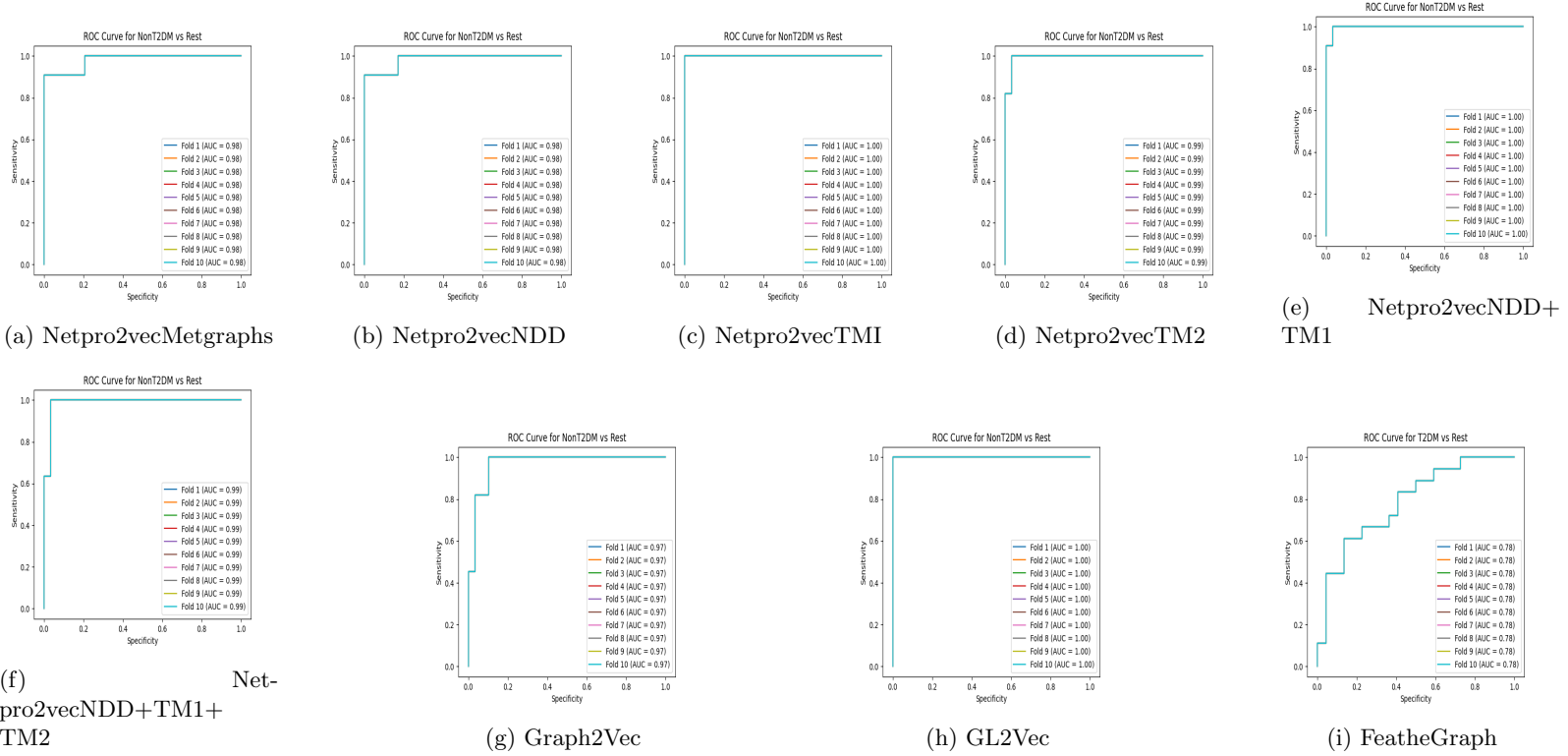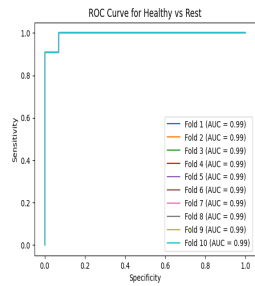
(f) Netpro2VecNDD+TM1+ TM2   (g) Graph2Vec   (h) GL2Vec   (i) FeatheGraph
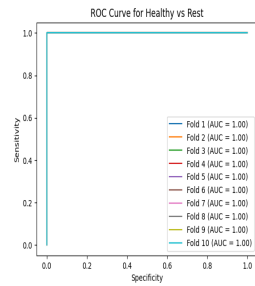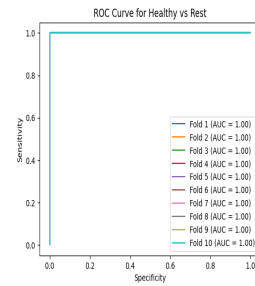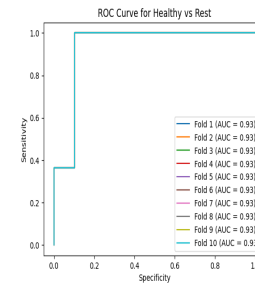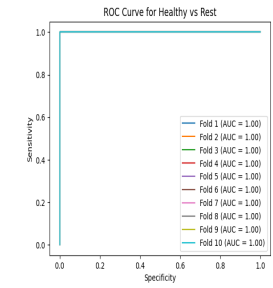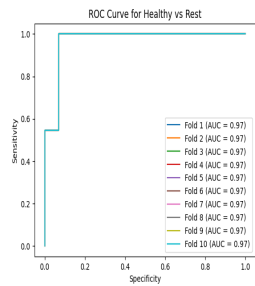
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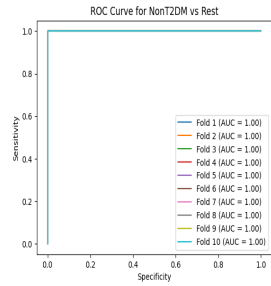
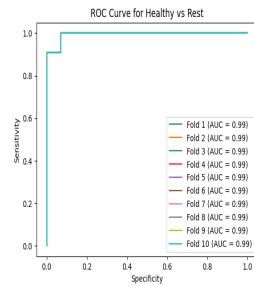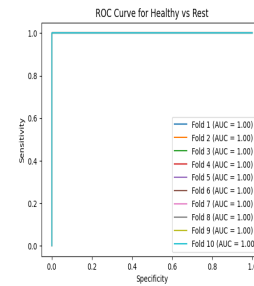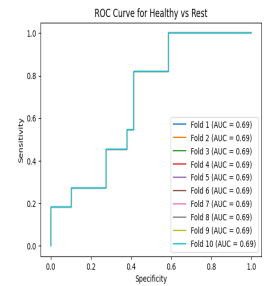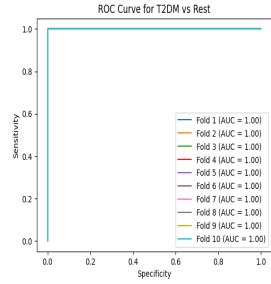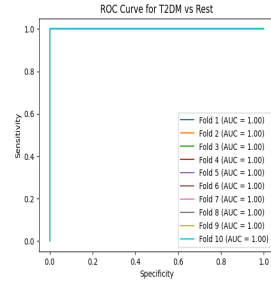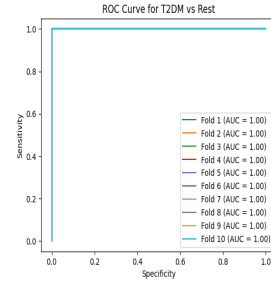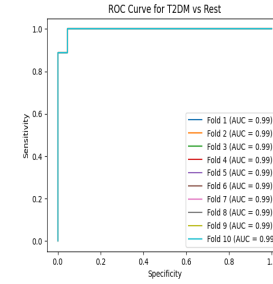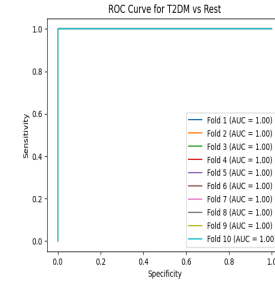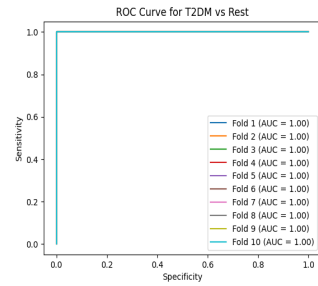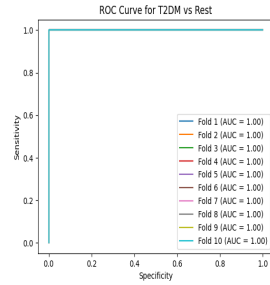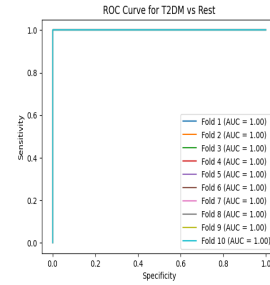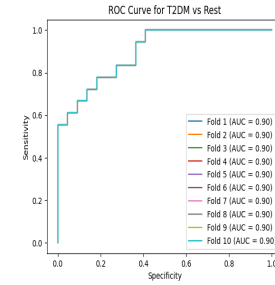(a) Netpro2vecMetgraphs
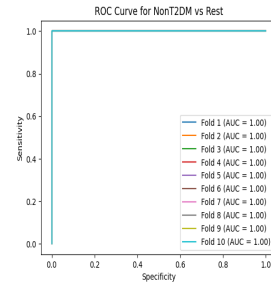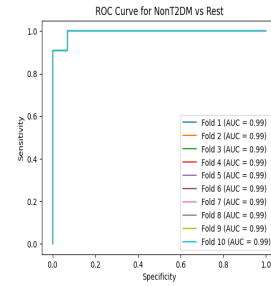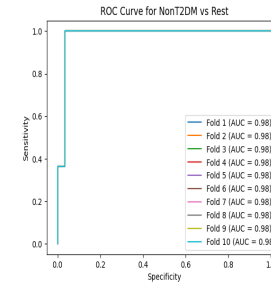
(b) Netpro2vecNDD

(c) Netpro2vecTMI
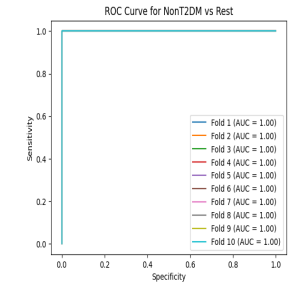
(d) Netpro2vecTM2

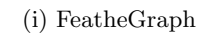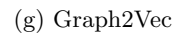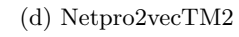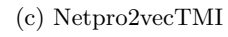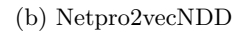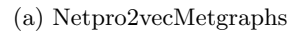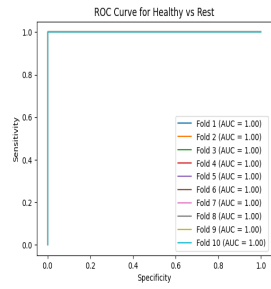(e) Netpro2vecNDD+TM1
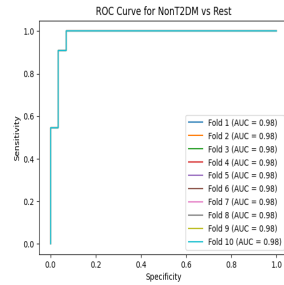
(f) Netpro2vecNDD+TM1+TM2
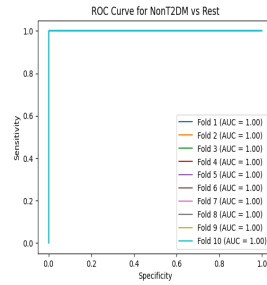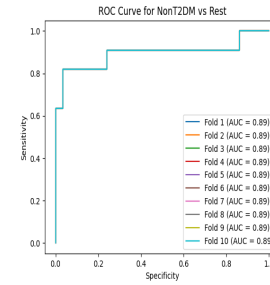
(g) Graph2Vec
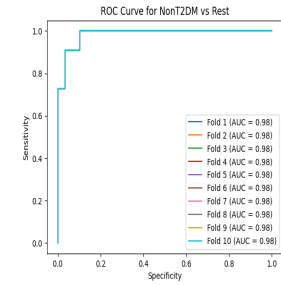
(h) GL2Vec

(i) FeatheGraph

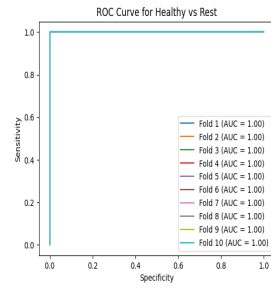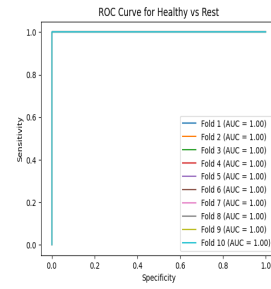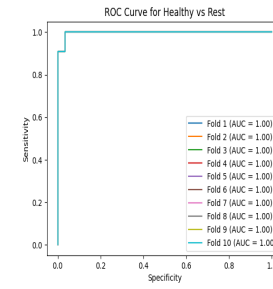## 1.3 Healthy
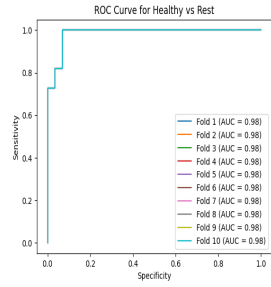
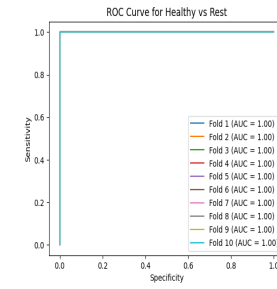(a) Netpro2vecMetgraphs
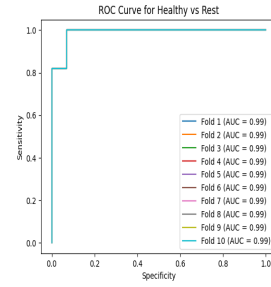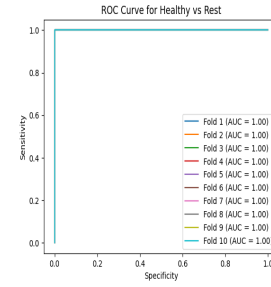
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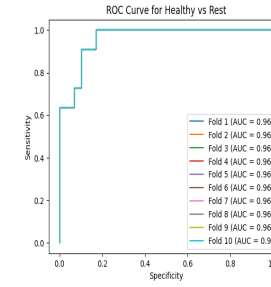
(c) Netpro2vecTMI
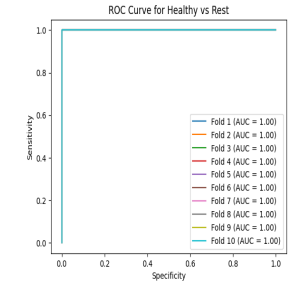
(d) Netpro2vecTM2

(e) Netpro2vecNDD+TM1
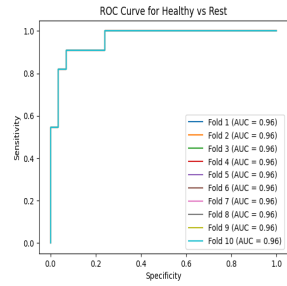
(f) Netpro2vecNDD+TM1+TM2
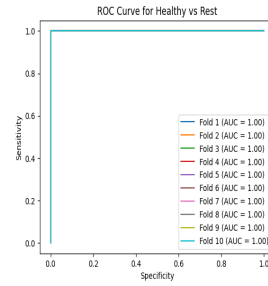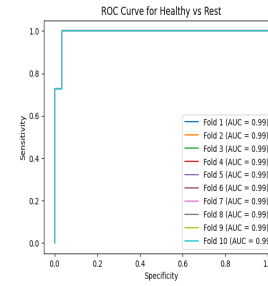
(g) Graph2Vec
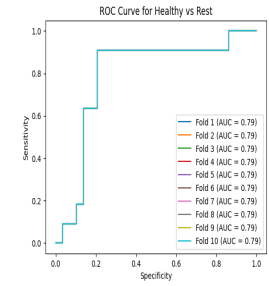
(h) GL2Vec

(i) FeatherGraph

2 ROC Charts for GCNs with the Normalized Features

2.1 T2DM
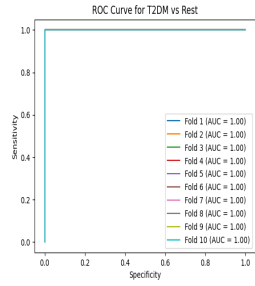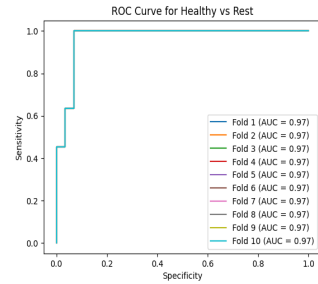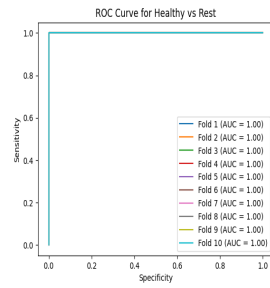
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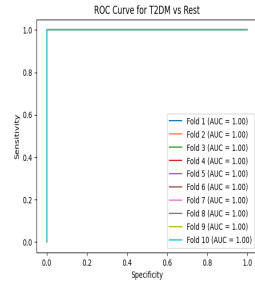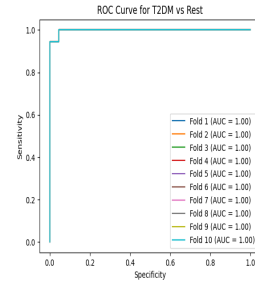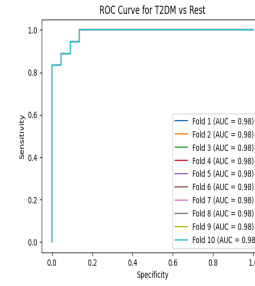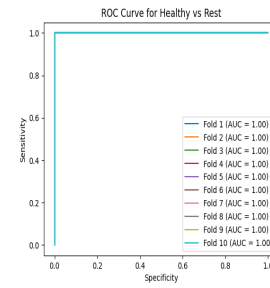
(b) Netpro2vecNDD

(c) Netpro2vecTMI
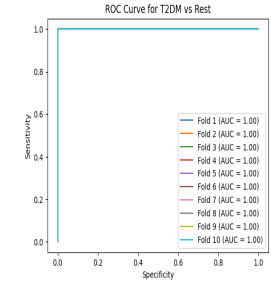
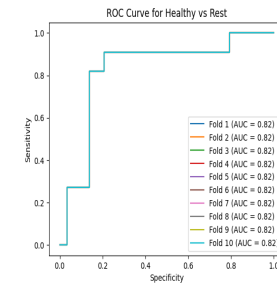(d) Netpro2vecTM2

(e) Netpro2vecNDD+TM1

(f) Netpro2vecNDD+TM1+TM2

(g) Graph2Vec

(h) GL2Vec

(i) FeatheGraph

2.2 Non-T2DM

(a) Netpro2vecMetgraphs

(b) Netpro2vecNDD

(c) Netpro2vecTMI

(d) Netpro2vecTM2

(e) Netpro2vecNDD+ TM1

(f) Net- pro2vecNDD+TM1+ TM2

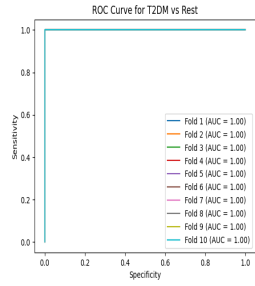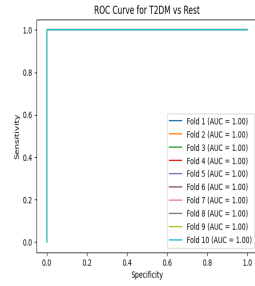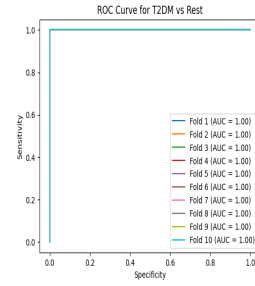(g) Graph2Vec

(h) GL2Vec
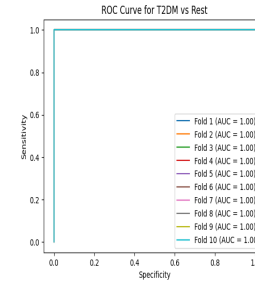

(i) FeatheGraph

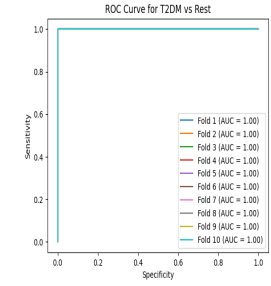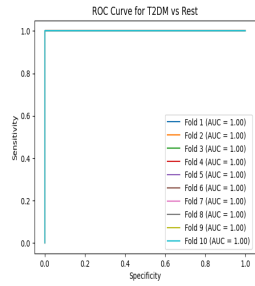## 2.3 Healthy

(a) Netpro2vecMetgraphs

(b) Netpro2vecNDD

(c) Netpro2vecTMI

(d) Netpro2vecTM2

(e) Netpro2vecNDD+TM1

(f) Netpro2vecNDD+TM1+TM2

(g) Graph2Vec

(h) GL2Vec

(i) FeatheGraph

3 ROC Charts for GCNs with the Original Removal Edges Features

3.1 T2DM
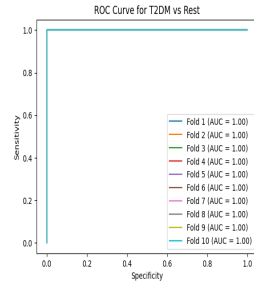
(a) Netpro2vecMetgraphs
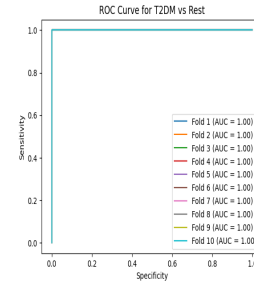
(b) Netpro2vecNDD

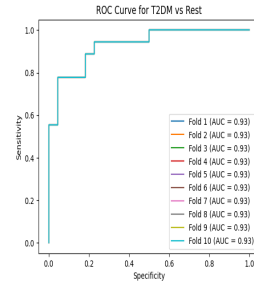(c) Netpro2vecTMI

(d) Netpro2vecTM2

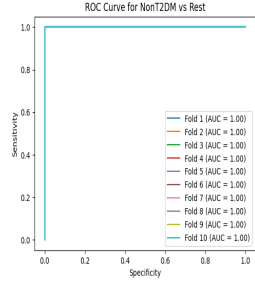(e) Netpro2vecNDD+TM1

(f) Netpro2VecNDD+TM1+ TM2

(g) Graph2Vec

(h) GL2Vec

(i) FeatheGraph

3.2   Non-T2DM

(a) Netpro2vecMetgraphs

(b) Netpro2vecNDD

(c) Netpro2vecTMI

(d) Netpro2vecTM2

(e) Netpro2vecNDD+TM1

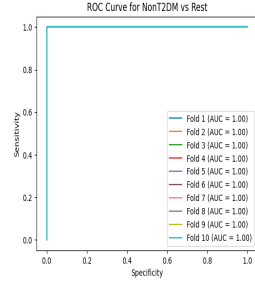(f)   Netpro2VecNDD+TM1+TM2
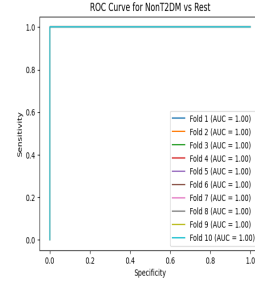

(g) Graph2Vec

(h) GL2Vec

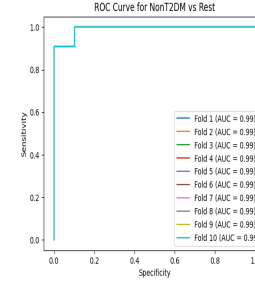

(i) FeatheGraph

3.3 Healthy
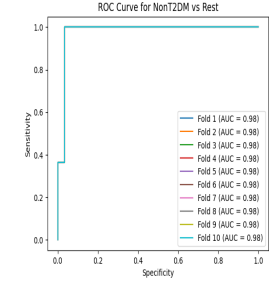

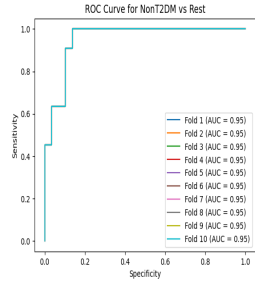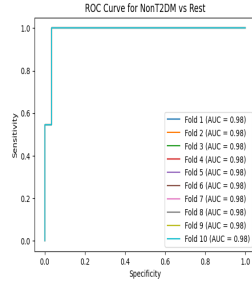(a) Netpro2vecMetgraphs

(b) Netpro2vecNDD

(c) Netpro2vecTMI

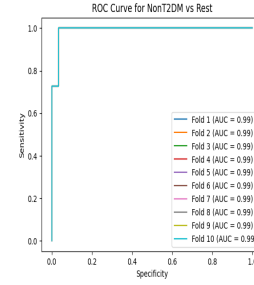(d) Netpro2vecTM2

(e) Netpro2vecNDD+TM1

(f) Netpro2VecNDD+TM1+TM2

(g) Graph2Vec

(h) GL2Vec

(i) FeatheGraph

4   ROC Chart of the Normalized Perturbation Features with All Parameters

4.1   T2DM

(a) Netpro2vecMetgraphs

(b) Netpro2vecNDD

(c) Netpro2vecTMI
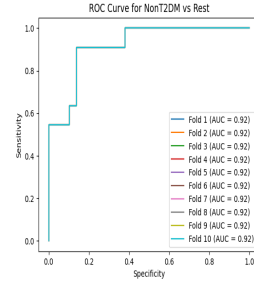

(d) Netpro2vecTM2

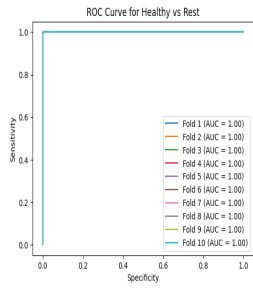(e) Netpro2vecNDD+ TM1

(f) Net-pro2vecNDD+TM1+ TM2

(g) Graph2Vec

(h) GL2Vec

(i) FeatheGraph

4.2   Non-T2DM

(a) Netpro2vecMetgraphs

(b) Netpro2vecNDD

(c) Netpro2vecTMI

(d) Netpro2vecTM2

(e) Netpro2vecNDD+TM1

(f) Netpro2vecNDD+TM1+TM2
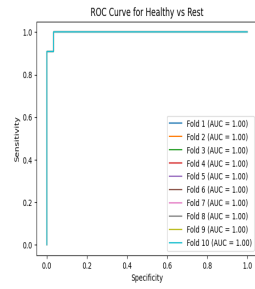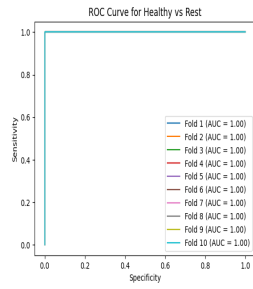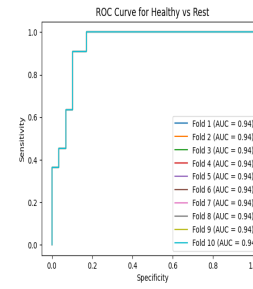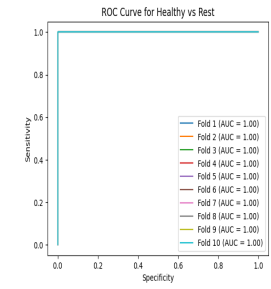
(g) Graph2Vec

(h) GL2Vec

(i) FeatheGraph

4.3 Healthy

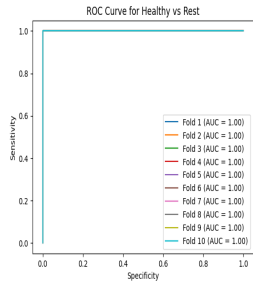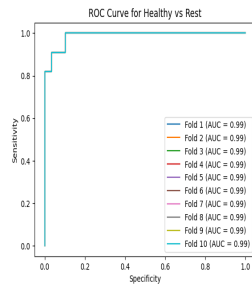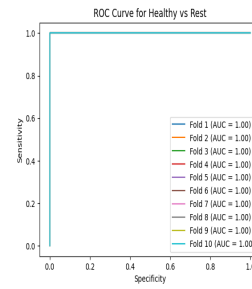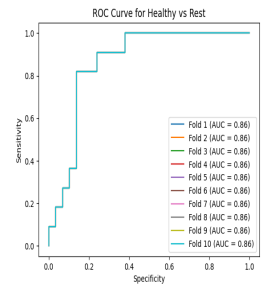(a) Netpro2vecMetgraphs

(b) Netpro2vecNDD

(c) Netpro2vecTMI

(d) Netpro2vecTM2

(e) Netpro2vecNDD+ TM1

(f) Net- pro2vecNDD+TM1+ TM2

(g) Graph2Vec

(h) GL2Vec

(i) FeatheGraph